Tighe&Bond
Engineers | Environmental Specialists

N-0998-11-13
December 1, 2017
Updated October 4, 2019

Ms. Shauna Little
United States Environmental Protection Agency – Region 1
1 Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

Re: **Submittal of Notice of Intent (NOI) Remediation General Permit (RGP)**
Operator Modification
Construction Dewatering
Aberjona River
Winchester, Massachusetts 01890
MAG910760

Dear Ms. Little:

On behalf of NSTAR Electric Company d/b/a Eversource Energy (Eversource), Tighe & Bond, Inc. (Tighe & Bond) has prepared this Notice of Intent (NOI) application for a National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) for the proposed construction dewatering activities conducted during installation of a new below grade electric transmission line and associated manholes beneath the Massachusetts Bay Transit Authority (MBTA) Wedgemere commuter rail station, along Fletcher Street, Bacon Street and a portion of Main Street in Winchester, Massachusetts to the City of Medford Border (the Site). A copy of the previous NOI is included in Appendix A. The limits of the Site are shown on the Aerial Dewatering Site Plan (Figure 1) and the Massachusetts Geographic Information Systems (MassGIS) Priority Resource Map (Figure 2) in Appendix B.

The purpose of this NOI is to facilitate the change in operator status from the existing contractor, BOND Brothers to the new operator, the Middlesex Corporation (Middlesex). A Notice of Termination for the former operator (Bond Brothers) has been filed.

As there is a need to treat and discharge water generated from the construction dewatering activities, the enclosed NOI form provides required information on general Site conditions, proposed treatment systems, discharge locations, receiving water, and laboratory analytical results from pre-discharge sampling and surface water sampling. The proposed treatment systems are shown on Figure 3 (Process Flow Diagram) in Appendix B. The excavation dewatering and discharge of treated groundwater are scheduled to resume in October 2019 and end in December 2020.

Dewatered groundwater at the Site will be treated by a groundwater treatment system before being discharged to on-site catch basins and into a stormwater drainage system managed by the Town of Winchester. All stormwater drainage systems subject to this RGP discharge to the Aberjona River in Winchester, Massachusetts. Post treatment discharge rates will range from 25 gallons per minute (GPM) to 150 GPM.

Project Background

The overall project involves the installation of 7.7 miles of new electric transmission line and 19 manholes between Mystic Substation 250 in Charlestown, Massachusetts to the Woburn

Substation 211 in Woburn Massachusetts. The proposed electrical transmission line trench will measure approximately three feet wide and will be installed at an approximate depth of five feet below ground surface (BGS). The manholes will be approximately 10 feet wide, by 25 feet long and 10 feet deep. Initial pre-characterization efforts have indicated that the average depth to groundwater at the Site is approximately seven feet BGS. Property uses along the project route are residential.

This RGP Permit Application is for the discharge of treated groundwater to the Winchester stormwater drainage system and ultimately to the Aberjona River.

Groundwater Characterization

To characterize groundwater along the proposed route of construction, groundwater samples were collected from groundwater monitoring wells MW-36 and MW-37 in January 2017. The groundwater samples were submitted for laboratory analysis for Environmental Protection Agency (EPA) RGP parameters. The laboratory analytical results are summarized in Table 1 included in Appendix E. A copy of the laboratory analytical report is included in Appendix F. Laboratory analytical results were compared to the RGP Technology Based Effluent Limitations (TBEL) and Water Quality Based Effluent Limit (WQBEL). The WQBEL were calculated in accordance with Appendix V of the RGP permit, for sites in Massachusetts.

Contaminants of concern are analytes that exceeded either the TBEL or WQBEL. Contaminants of concern detected in MW-36 and MW-37 include group I PAHs, iron, and total suspended solids (TSS). Since these monitoring wells were installed adjacent to a roadway, chloride detected in groundwater samples is most likely associated with road salting during the winter months.

Receiving Water Characterization

Aberjona River (waterbody identification MA71-01) is classified as a Class B impaired water body and is listed in the 303(d) Impaired Waterbodies Document. According to the United States Geologic Survey's StreamStats online application, the 7Q10 value at Aberjona River was calculated at 0.968 million gallons per day (MGD).

As required by the NPDES RGP, a surface water sample was collected prior to discharge and analyzed for contaminants of concern that were present in the groundwater samples from the monitoring wells discussed above. The surface water sample was collected in November 2017 and sent for laboratory analysis of metals, ammonia, hexavalent chromium, pH and hardness. The surface water sample was collected within a quarter mile of the potential outfall location at the Aberjona River, and is shown on Figure 1 (Dewatering Site Plan) in Appendix B. Contaminants of concern detected in the surface water sample include arsenic, copper, iron, zinc and ammonia.

Treatment System

Dewatered groundwater at the Site will be treated by a mobile system before being discharged to on-Site catch basins and into a stormwater drainage system managed by the Town of Winchester stormwater drainage system ultimately discharging to the Aberjona River. A list of the proposed stormwater outfall, including location, latitude/longitude coordinates, municipality and system owner is provided in Appendix A.

Mobile Treatment System

Depending on the level of treatment required and discharge flow rate, the mobile treatment system will be mounted on two 30-foot mobile trailers. The mounted treatment system could consist of a flocculant tube, particulate filter units, bag filters and/or granular activated carbon (GAC)/clay filter, as shown on Figure 3 in Appendix B "Process Flow Diagram". Based on effluent monitoring results, the treatment system or flow rate will be modified to comply with the effluent limits. The Safety Data Sheets (SDS) associated with the treatment system are provided in Appendix H.

Flow Rate (GPM)	Proposed Treatment System
0-50	TSS treatment via a silt/pipe sock or bag filter
50-150	Two 30-foot trailer with particulate filter units, bag filters and/or GAC/clay filter. Coagulants/flocculants

Chemical & Additives Information

Based on groundwater samples collected from the Site and in order to achieve effluent limitations for the groundwater, coagulants/ flocculants have been added to the treatment system. Information for the coagulants/ flocculants as required in Part 2.5.2.g.iii of the RGP is provided below. Please note, the product name, chemical abstract service (CAS) number, chemical formula, and manufacturer of the chemical/additives are provided in the SDS included in Appendix H.

To achieve effluent limitations specifically for TSS, coagulants/flocculants as part of the HaloKlear Dual Polymer System (DBP) have been added to the treatment system design. The DPS uses a sequence of coagulation (DBP-2100) and flocculation (GEL-Floc) treatment reactions to remove particles from the influent. The coagulant will neutralize the electrical charges which make particles suspended in solution, and the flocculant will collect the particles so they can agglomerate. Agglomerates will then settle out of solution in the following fractionation tanks and/or bag filters prior to effluent discharge. Through the removal of suspended solids within the water stream, it is anticipated that metals adsorbed to soil particles will also settle out and the metals concentrations in the effluent will decrease.

The DPS uses a sequence of polymers that perform coagulation and flocculation reactions. Both the coagulant (DBP-2100) and flocculant (GEL-Floc) are dry powders integrated into the treatment system as socks, placed within the flocculant tube. The socks continually dose as the influent flows through the tube; therefore, the method of application is in-line discharge prior to water entering the fractionation tanks. Each sock doses at 200 parts per million (ppm) for a flow of 150 GPM. Since flow through the sock is 150 GPM, the maximum concentration would be 200 ppm per minute. Since the dosing is dependent on flow through the treatment system, the frequency and duration at which influent is exposed to the coagulant/flocculant is continuous flow, whenever dewatering is occurring. The coagulant/flocculant will be added at a constant dosage rate of 200 ppm per minute. The treatment system will be operated for a maximum of 8 hours per day for a maximum daily concentration of 288,000 ppm per day.

Required Statements

As required in Part 2.5.3.d.ii, the addition of coagulants/flocculants as proposed for this treatment system:

1) Will not add any pollutants in concentrations which exceed permit effluent limitations;

2) Will not exceed any applicable water quality standards;

3) Will not add any pollutants that would justify the application of permit conditions that are different from or absent in this permit.

Chemicals included in the DPS are naturally derived and 100% biodegradable. The coagulant (DBP-2100) is a dry powder formulated from a plant-based protein, and the flocculant (GEL-Floc) is made from chitosan lactate, which is made from crustacean exoskeletons. Additionally, the chemical combinations proposed as part of the coagulant/flocculants passed fish kill studies.

Best Management Practices Plan

Tighe & Bond designed a Best Management Practices Plan (BMPP) for the groundwater extraction and treatment systems for the Site. The BMPP meeting the requirement of the RGP will be developed and implemented upon initiation of the discharge.

Owner and Operator

Owner
NSTAR Electric Company
d/b/a Eversource
Dean S. Bebis
247 Station Drive
Westwood, MA 02090

Operator
The Middlesex Corporation
Jose Nieto
1 Spectacle Pond Road
Littleton, MA 01460

Notice of Intent

Preparation of this NOI has included a review of the literature pertaining to Areas of Critical Environmental Concern (ACEC), Endangered Species Act (ESA), and the National Historic Preservation Act (NHPA), as documented below:

- Review of a MassGIS Priority Resource Map, Figure 2, shows the Site is not within an ACEC;
- Review of the "Federally Listed Endangered and Threatened Species in Massachusetts" (Appendix C) found that there are two listed species in Middlesex County. The first species is the whorled pogonia which prefers forest habitat, and the second species is the Northern Long-Eared bat, which prefers mines and caves in the winter and forested habitats in the summer. The small whorled pogonia is found in the Groton area while the northern long-eared bat is found statewide. As the Site is not in Groton, the small whorled pogonia will not be affected from construction activities or from the proposed discharges. The project area consists of an asphalt roadway that borders a residential area. No vegetation will be disturbed during construction activities. As a result, it is the opinion of Tighe & Bond that the habitats for Northern Long-Eared bat will not be disturbed during construction activities. Additionally, the discharge is to Aberjona River which is not a habitat where the Northern Long-Eared bat exists.
- According to United States Fish and Wildlife Services (USFWS) Information, Planning and Conservation (IPaC) tool there are no critical habitats within the Site. USFWS confirmed there are no critical habitats in the area and confirmed permit eligibility meets "Criterion A."
    - Additionally, according to the MassGIS Priority Resource Map, no NHESP Priority Habitats for Rare Species or Estimated Habitats for Rare Wildlife, were

present within half a mile downstream of the discharge location. Therefore, permit eligibility meets "Criterion A."

- An electronic review of the Massachusetts Cultural Resource Information System database (Appendix D), made available through the Massachusetts Historical Commission, found several historical areas along Fletcher Street, Bacon Street and Main Street in Winchester, Massachusetts. Discharges and discharge related activities do not have the potential to cause effects on these historic properties as the discharge activities are limited to the roadway and will go through already existing drainage systems. Therefore, permit eligibility meets "Criterion B."
- Groundwater samples were collected from on-site groundwater monitoring wells MW-36 and MW-37 in January of 2017. The groundwater samples were submitted for laboratory analysis for RGP parameters. The laboratory analytical results are summarized in the Table included in Appendix E. A copy of the laboratory analytical report is included in Appendix F. Laboratory analytical results were compared to the RGP TBEL or WQBEL.

- Surface water samples were collected from the Aberjona River within a quarter mile of the potential outfall location in November of 2017submitted for laboratory analysis of RGP parameters that were detected in the groundwater samples. The laboratory analytical results are summarized in the Table 2 included in Appendix E and F compared to the RGP TBEL or WQBEL.

Based on the critical low flow (7Q10) value of the receiving water (0.968 MGD) and the proposed maximum discharge rate of up to 0.216 MGD, a dilution factor of 2.92 was established for this permit and verified by the Massachusetts Department of Environmental Protection (MassDEP), the MassDEP confirmation is included in Appendix E. The 7Q10 value was calculated using the United States Geologic Survey's StreamStats online application, and the dilution factor was calculated as instructed by the EPA *Dilution Factor and Effluent Limitation Calculations for Massachusetts,* Appendix V.

The proposed treatment systems have been designed to reduce contaminants of concern to below the applicable effluent limits. Effluent compliance monitoring will be conducted on a monthly basis and the effluent samples submitted for environmental laboratory analysis of the parameters specified in EPA Authorization MAG910760, dated December 20, 2017. A copy of the EPA authorization is included in Appendix G. Additionally, the flow rate, pH and turbidity levels will be monitored in the field and recorded.

If you need any additional information or assistance on this project, please do not hesitate to contact Bryan Gammons at (508) 304-6366 or Michael Martin at (508) 304-6355 at your convenience.

Very truly yours,

TIGHE & BOND, INC.

Bryan O. Gammons
Senior Environmental Scientist

Michael Martin
Project Manager

Enclosures
Copy: Michael Zylich, Eversource
Dean Bebis, Eversource
Jose Nieto, Middlesex Corporation
MassDEP, Division of Watershed Management
MassDEP, Boston

List of Appendices

List of Figures

Tighe&Bond

APPENDIX A

II. Suggested Format for the Remediation General Permit Notice of Intent (NOI)

A. General site information:

<table>
<tr><td rowspan="2">1. Name of site:
Eversource Electrical Transmission Line Project</td><td colspan="3">Site address: Fletcher Street, Bacon Street, Main Street to the Medford City Border
Street:</td></tr>
<tr><td>City: Winchester</td><td>State: MA</td><td>Zip: 01890</td></tr>
<tr><td rowspan="4">2. Site owner
Eversource Energy d/b/a NSTAR Electric Company

Owner is (check one): ☐ Federal ☐ State/Tribal ☐ Private
■ Other; if so, specify: Utility working on Public Right of Way</td><td colspan="3">Contact Person: Michael Zylich</td></tr>
<tr><td colspan="2">Telephone: 781-441-3804</td><td>Email: michael.zylich@eversource.com</td></tr>
<tr><td colspan="3">Mailing address: 247 Station Drive, SE270
Street:</td></tr>
<tr><td>City: Westwood</td><td>State: MA</td><td>Zip: 02090</td></tr>
<tr><td rowspan="4">3. Site operator, if different than owner
The Middlesex Corp.</td><td colspan="3">Contact Person: Jose Nieto</td></tr>
<tr><td colspan="2">Telephone: 978-742-4400</td><td>Email: jnieto@middlesexco.com</td></tr>
<tr><td colspan="3">Mailing address:
Street: 1 Spectacle Pond Road</td></tr>
<tr><td>City: Litleton</td><td>State: MA</td><td>Zip: 01460</td></tr>
<tr><td>4. NPDES permit number assigned by EPA:
MAR1000R1

NPDES permit is (check all that apply: ■ RGP ☐ DGP ■ CGP
☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:</td><td colspan="3">5. Other regulatory program(s) that apply to the site (check all that apply):
☐ MA Chapter 21e; list RTN(s):

☐ NH Groundwater Management Permit or Groundwater Release Detection Permit:

☐ CERCLA
☐ UIC Program
☐ POTW Pretreatment
☐ CWA Section 404</td></tr>
</table>

B. Receiving water information:

1. Name of receiving water(s):	Waterbody identification of receiving water(s):	Classification of receiving water(s):
Aberjona River	MA71-01	Class B

Receiving water is (check any that apply): ☐ Outstanding Resource Water ☐ Ocean Sanctuary ☐ territorial sea ☐ Wild and Scenic River

2. Has the operator attached a location map in accordance with the instructions in B, above? (check one): ■ Yes ☐ No

Are sensitive receptors present near the site? (check one): ■ Yes ☐ No

If yes, specify: Aberjona River-Surface Water Body

3. Indicate if the receiving water(s) is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d)). Include which designated uses are impaired, and any pollutants indicated. Also, indicate if a final TMDL is available for any of the indicated pollutants. For more information, contact the appropriate State as noted in Part 4.6 of the RGP. Physical substrate habitat alterations, ammonia (un-ionized), aquatic macroinvertebrate bioassessments, arsenic, escherichia coli, oxygen dissolved,

4. Indicate the seven day-ten-year low flow (7Q10) of the receiving water determined in accordance with the instructions in Appendix V for sites located in Massachusetts and Appendix VI for sites located in New Hampshire.	0.968 MGD
5. Indicate the requested dilution factor for the calculation of water quality-based effluent limitations (WQBELs) determined in accordance with the instructions in Appendix V for sites in Massachusetts and Appendix VI for sites in New Hampshire.	2.92

6. Has the operator received confirmation from the appropriate State for the 7Q10and dilution factor indicated? (check one): ■ Yes ☐ No

If yes, indicate date confirmation received: November 29, 2017

7. Has the operator attached a summary of receiving water sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No

C. Source water information:

1. Source water(s) is (check any that apply):

■ Contaminated groundwater Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ■ Yes ☐ No	☐ Contaminated surface water Has the operator attached a summary of influent sampling results as required in Part 4.2 of the RGP in accordance with the instruction in Appendix VIII? (check one): ☐ Yes ☐ No	☐ The receiving water ☐ A surface water other than the receiving water; if so, indicate waterbody:	☐ Potable water; if so, indicate municipality or origin: ☐ Other; if so, specify:

2. Source water contaminants: Group I PAHs, Iron, Chloride, Ammonia, TSS	
a. For source waters that are contaminated groundwater or contaminated surface water, indicate are any contaminants present that are not included in the RGP? (check one): ☐ Yes ■ No If yes, indicate the contaminant(s) and the maximum concentration present in accordance with the instructions in Appendix VIII.	b. For a source water that is a surface water other than the receiving water, potable water or other, indicate any contaminants present at the maximum concentration in accordance with the instructions in Appendix VIII? (check one): ☐ Yes ☐ No
3. Has the source water been previously chlorinated or otherwise contains residual chlorine? (check one): ☐ Yes ■ No	

D. Discharge information

1.The discharge(s) is a(n) (check any that apply): ☐ Existing discharge ☐ New discharge ☐ New source	
Outfall(s): Aberjona River	Outfall location(s): (Latitude, Longitude) 42.444222; -71.138938
Discharges enter the receiving water(s) via (check any that apply): ☐ Direct discharge to the receiving water ■ Indirect discharge, if so, specify: Winchester stormwater drainage system / surface outfall ☐ A private storm sewer system ■ A municipal storm sewer system If the discharge enters the receiving water via a private or municipal storm sewer system: Has notification been provided to the owner of this system? (check one): ■ Yes ☐ No Has the operator has received permission from the owner to use such system for discharges? (check one): ☐ Yes ■ No, if so, explain, with an estimated timeframe for obtaining permission: Prior to excavation, The Middlesex Corpation will obtain the necessary Street Opening and Discharge Permits Has the operator attached a summary of any additional requirements the owner of this system has specified? (check one): ☐ Yes ■ No	
Provide the expected start and end dates of discharge(s) (month/year): October 2019 to December 2020 Indicate if the discharge is expected to occur over a duration of: ☐ less than 12 months ■ 12 months or more ☐ is an emergency discharge	
Has the operator attached a site plan in accordance with the instructions in D, above? (check one): ■ Yes ☐ No	

<table>
<tr><td>2. Activity Category: (check all that apply)</td><td colspan="2">3. Contamination Type Category: (check all that apply)</td></tr>
<tr><td rowspan="5">☐ I – Petroleum-Related Site Remediation
☐ II – Non-Petroleum-Related Site Remediation
■ III – Contaminated Site Dewatering
☐ IV – Dewatering of Pipelines and Tanks
☐ V – Aquifer Pump Testing
☐ VI – Well Development/Rehabilitation
☐ VII – Collection Structure Dewatering/Remediation
☐ VIII – Dredge-Related Dewatering</td><td colspan="2">a. If Activity Category I or II: (check all that apply)

☐ A. Inorganics
☐ B. Non-Halogenated Volatile Organic Compounds
☐ C. Halogenated Volatile Organic Compounds
☐ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
☐ F. Fuels Parameters</td></tr>
<tr><td colspan="2">b. If Activity Category III, IV, V, VI, VII or VIII: (check either G or H)</td></tr>
<tr><td>■ G. Sites with Known Contamination</td><td>☐ H. Sites with Unknown Contamination</td></tr>
<tr><td>c. If Category III-G, IV-G, V-G, VI-G, VII-G or VIII-G: (check all that apply)

■ A. Inorganics
■ B. Non-Halogenated Volatile Organic Compounds
■ C. Halogenated Volatile Organic Compounds
■ D. Non-Halogenated Semi-Volatile Organic Compounds
☐ E. Halogenated Semi-Volatile Organic Compounds
■ F. Fuels Parameters</td><td>d. If Category III-H, IV-H, V-H, VI-H, VII-H or VIII-H Contamination Type Categories A through F apply</td></tr>
</table>

4. Influent and Effluent Characteristics

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
A. Inorganics									
Ammonia		✔	4	7010	0.10	0.64	0.31	Report mg/L	---
Chloride		✔	4		10	240	152.5	Report µg/l	---
Total Residual Chlorine	✔		4	4500-C1 E	10	<10	0	0.2 mg/L	21
Total Suspended Solids		✔	4	2540D	5,000	1,640,000	442,250	30 mg/L	---
Antimony	✔		4	7010	5	<5	0	206 µg/L	1,229
Arsenic		✔	4	7010	5	7.8	2.9	104 µg/L	10
Cadmium		✔	4	7010	0.5	0.10	0.045	10.2 µg/L	0.4836
Chromium III		✔	4	6010C	10	12	3	323 µg/L	314.5
Chromium VI		✔	4	6010C	10	11.6	0	323 µg/L	22
Copper		✔	4	6010C	5	14.2	5.43	242 µg/L	29
Iron		✔	4	6010C	50	3,100	1,336	5,000 µg/L	1,000
Lead		✔	4	7010	2.5	9.0	2.25	160 µg/L	16.57
Mercury	✔		4	7470A	0.20	<0.20	0	0.739 µg/L	1.74
Nickel		✔	4	6010C	10	1.5	0.375	1,450 µg/L	194.4
Selenium	✔		4	7010	5	<5	0	235.8 µg/L	9.6
Silver		✔	4	7010	0.20	0.09	0.0225	35.1 µg/L	28.0
Zinc		✔	4	6010C	25	62	30.05	420 µg/L	361
Cyanide	✔		4	4500 CN	5	<5	0	178 mg/L	10
B. Non-Halogenated VOCs									
Total BTEX		✔	4	8260B	1	1.4	0.73	100 µg/L	---
Benzene		✔	4	8260B	1	0.20	0.125	5.0 µg/L	---
1,4 Dioxane	✔		4	8260B	500	<500	0	200 µg/L	---
Acetone	✔		4	8260B	10	<10	0	7.97 mg/L	---
Phenol	✔		4	420.1	100	<100	0	1,080 µg/L	576

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
C. Halogenated VOCs									
Carbon Tetrachloride	✔		4	8260B	1	<1	0	4.4 µg/L	3.1
1,2 Dichlorobenzene	✔		4	8260B	1	<1	0	600 µg/L	---
1,3 Dichlorobenzene	✔		4	8260B	1	<1	0	320 µg/L	---
1,4 Dichlorobenzene	✔		4	8260B	1	<1	0	5.0 µg/L	---
Total dichlorobenzene	✔		4	8260B	1	<1	0	763 µg/L in NH	---
1,1 Dichloroethane	✔		4	8260B	1	<1	0	70 µg/L	---
1,2 Dichloroethane	✔		4	8260B	1	<1	0	5.0 µg/L	---
1,1 Dichloroethylene	✔		4	8260B	1	<1	0	3.2 µg/L	---
Ethylene Dibromide	✔		4	8011	0.015	<0.015	0	0.05 µg/L	---
Methylene Chloride		✔	4	8260B	2	0.20	0.05	4.6 µg/L	---
1,1,1 Trichloroethane	✔		4	8260B	1	<1	0	200 µg/L	---
1,1,2 Trichloroethane	✔		4	8260B	1	<1	0	5.0 µg/L	---
Trichloroethylene	✔		4	8260B	1	<1	0	5.0 µg/L	---
Tetrachloroethylene	✔		4	8260B	1	<1	0	5.0 µg/L	6.3
cis-1,2 Dichloroethylene	✔		4	8260B	1	<1	0	70 µg/L	---
Vinyl Chloride	✔		4	8260B	1	<1	0	2.0 µg/L	---
D. Non-Halogenated SVOCs									
Total Phthalates		✔	4	8270D	2.34	6.99	4.49	190 µg/L	NE
Diethylhexyl phthalate		✔	4	8270D	2.34	3.85	2.70	101 µg/L	4.2
Total Group I PAHs		✔	4	8270D	0.05	1.68	0.463	1.0 µg/L	---
Benzo(a)anthracene		✔	4	8270D	0.05	0.26	0.075	As Total PAHs	0.0073
Benzo(a)pyrene		✔	4	8270D	0.05	0.29	0.08		0.0073
Benzo(b)fluoranthene		✔	4	8270D	0.05	0.37	0.102		0.0073
Benzo(k)fluoranthene		✔	4	8270D	0.05	0.14	0.035		0.0073
Chrysene		✔	4	8270D	0.05	0.35	0.097		0.0073
Dibenzo(a,h)anthracene		✔	4	8270D	0.05	0.05	0.012		0.0073
Indeno(1,2,3-cd)pyrene		✔	4	8270D	0.05	0.22	0.06		0.0073

Parameter	Known or believed absent	Known or believed present	# of samples	Test method (#)	Detection limit (µg/l)	Influent		Effluent Limitations	
						Daily maximum (µg/l)	Daily average (µg/l)	TBEL	WQBEL
Total Group II PAHs		✔	4	8270D	0.19	3.59	1.08	100 µg/L	---
Naphthalene		✔	4	8270D	0.19	0.11	0.055	20 µg/L	---
E. Halogenated SVOCs									
Total PCBs	✔		4	8082A	0.09	<0.09	0	0.000064 µg/L	---
Pentachlorophenol	✔		4	8270D	0.84	<0.84	0	1.0 µg/L	---
F. Fuels Parameters									
Total Petroleum Hydrocarbons	✔		4	1664A	5	<5	0	5.0 mg/L	---
Ethanol	✔		4	8015	10	<10	0	Report mg/L	---
Methyl-tert-Butyl Ether		✔	4	8260B	1	0.70	0.325	70 µg/L	38
tert-Butyl Alcohol	✔		4	8260B	25	<25	0	120 µg/L in MA 40 µg/L in NH	---
tert-Amyl Methyl Ether	✔		4	8260B	1	<1	0	90 µg/L in MA 140 µg/L in NH	---
Other (i.e., pH, temperature, hardness, salinity, LC_{50}, additional pollutants present); if so, specify:									
Hardness		✔	1	6010C	412	142,000	142,000		

E. Treatment system information

1. Indicate the type(s) of treatment that will be applied to effluent prior to discharge: (check all that apply)

☐ Adsorption/Absorption ☐ Advanced Oxidation Processes ☐ Air Stripping ■ Granulated Activated Carbon ("GAC")/Liquid Phase Carbon Adsorption

☐ Ion Exchange ■ Precipitation/Coagulation/Flocculation ■ Separation/Filtration ☐ Other; if so, specify:

2. Provide a written description of all treatment system(s) or processes that will be applied to the effluent prior to discharge.

The treatment system is composed of flocculent tubes, two 10,000-gallon fractionation tank, one sand filter unit and two particulate filters, two granular activated carbon (GAC) filters and two clay vessels. The groundwater will pumped from the excavation into the flocculent tubes and then into the fractionation tanks. From the fractionation tanks, the pumped through a sand filter and particulate filter for the removal of solids, then into the GAC filters and clay vessels to remove organics and then through one more particulate filter to remove any residual solids

Identify each major treatment component (check any that apply):

■ Fractionation tanks☐ Equalization tank ☐ Oil/water separator ☐ Mechanical filter ☐ Media filter

☐ Chemical feed tank ☐ Air stripping unit ■ Bag filter ☐ Other; if so, specify:

Indicate if either of the following will occur (check any that apply):

☐ Chlorination ☐ De-chlorination

3. Provide the **design flow capacity** in gallons per minute (gpm) of the most limiting component. Indicate the most limiting component: 150 Is use of a flow meter feasible? (check one): ■ Yes ☐ No, if so, provide justification:	150
Provide the proposed maximum effluent flow in gpm.	150
Provide the average effluent flow in gpm.	50
If Activity Category IV applies, indicate the estimated total volume of water that will be discharged:	

4. Has the operator attached a schematic of flow in accordance with the instructions in E, above? (check one): ■ Yes ☐ No

F. Chemical and additive information

1. Indicate the type(s) of chemical or additive that will be applied to effluent prior to discharge or that may otherwise be present in the discharge(s): (check all that apply)

☐ Algaecides/biocides ☐ Antifoams ■ Coagulants ☐ Corrosion/scale inhibitors ☐ Disinfectants ■ Flocculants ☐ Neutralizing agents ☐ Oxidants ☐ Oxygen ☐ scavengers ☐ pH conditioners ☐ Bioremedial agents, including microbes ☐ Chlorine or chemicals containing chlorine ☐ Other; if so, specify:

2. Provide the following information for each chemical/additive, using attachments, if necessary:

See attached cover letter/SDS for information listed below.

a. Product name, chemical formula, and manufacturer of the chemical/additive;
b. Purpose or use of the chemical/additive or remedial agent;
c. Material Safety Data Sheet (MSDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
d. The frequency (hourly, daily, etc.), duration (hours, days), quantity (maximum and average), and method of application for the chemical/additive;
e. Any material compatibility risks for storage and/or use including the control measures used to minimize such risks; and
f. If available, the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

3. Has the operator attached an explanation which demonstrates that the addition of such chemicals/additives may be authorized under this general permit in accordance with the instructions in F, above? (check one): ■ Yes ☐ No; if no, has the operator attached data that demonstrates each of the 126 priority pollutants in CWA Section 307(a) and 40 CFR Part 423.15(j)(1) are non-detect in discharges with the addition of the proposed chemical/additive?

(check one): ☐ Yes ☐ No

G. Endangered Species Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

■ **FWS Criterion A**: No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area".

☐ **FWS Criterion B**: Formal or informal consultation with the FWS under section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by FWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat (informal consultation). Has the operator completed consultation with FWS? (check one): ☐ Yes ☐ No; if no, is consultation underway? (check one): ☐ Yes ☐ No

☐ **FWS Criterion C**: Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the discharges and related activities will have "no effect" on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the FWS. This determination was made by: (check one) ☐ the operator ☐ EPA ☐ Other; if so, specify:

■ **NMFS Criterion**: A determination made by EPA is affirmed by the operator that the discharges and related activities will have "no effect" or are "not likely to adversely affect" any federally threatened or endangered listed species or critical habitat under the jurisdiction of NMFS and will not result in any take of listed species. Has the operator previously completed consultation with NMFS? (check one): ☐ Yes ■ No

2. Has the operator attached supporting documentation of ESA eligibility in accordance with the instructions in Appendix I, and G, above? (check one): ■ Yes ☐ No

Does the supporting documentation include any written concurrence or finding provided by the Services? (check one): ■ Yes ☐ No; if yes, attach.

H. National Historic Preservation Act eligibility determination

1. Indicate under which criterion the discharge(s) is eligible for coverage under this general permit:

☐ **Criterion A**: No historic properties are present. The discharges and discharge-related activities (e.g., BMPs) do not have the potential to cause effects on historic properties.

■ **Criterion B**: Historic properties are present. Discharges and discharge related activities do not have the potential to cause effects on historic properties.

☐ **Criterion C**: Historic properties are present. The discharges and discharge-related activities have the potential to have an effect or will have an adverse effect on historic properties.

2. Has the operator attached supporting documentation of NHPA eligibility in accordance with the instructions in H, above? (check one): ■ Yes ☐ No

Does the supporting documentation include any written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (TPHO), or other tribal representative that outlines measures the operator will carry out to mitigate or prevent any adverse effects on historic properties? (check one): ■ Yes ☐ No

I. Supplemental information

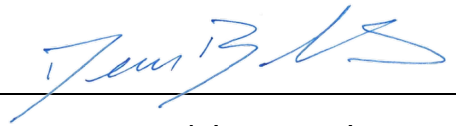
Describe any supplemental information being provided with the NOI. Include attachments if required or otherwise necessary.

Has the operator attached data, including any laboratory case narrative and chain of custody used to support the application? (check one): ■ Yes ☐ No

Has the operator attached the certification requirement for the Best Management Practices Plan (BMPP)? (check one): ■ Yes ☐ No

J. Certification requirement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BMPP certification statement: A BMPP meeting the requirements of this general permit will be developed and implemented upon initiation of discharge.	
Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ☒ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ☒ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ☒ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☒ No ☐ NA ☐
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ☐
Signature: 	Date: 10/3/19
Print Name and Title: Dean Bebis, Environmental Compliance Specialist	

J. Certification requirement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BMPP certification statement: A BMPP meeting the requirements of this general permit will be developed and implemented upon initiation of discharge.

Notification provided to the appropriate State, including a copy of this NOI, if required.	Check one: Yes ☒ No ☐
Notification provided to the municipality in which the discharge is located, including a copy of this NOI, if requested.	Check one: Yes ☒ No ☐
Notification provided to the owner of a private or municipal storm sewer system, if such system is used for site discharges, including a copy of this NOI, if requested.	Check one: Yes ☒ No ☐ NA ☐
Permission obtained from the owner of a private or municipal storm sewer system, if such system is used for site discharges. If yes, attach additional conditions. If no, attach explanation and timeframe for obtaining permission.	Check one: Yes ☒ No ☐ NA ☐
Notification provided to the owner/operator of the area associated with activities covered by an additional discharge permit(s). Additional discharge permit is (check one): ☐ RGP ☐ DGP ☐ CGP ☐ MSGP ☐ Individual NPDES permit ☐ Other; if so, specify:	Check one: Yes ☐ No ☐ NA ☐

Signature: [signature] Date: 10/4/19

Print Name and ~~Title:~~ Jose Nieto, Project Manager

Tighe&Bond

APPENDIX B

RGP Limit

RGP Boundary Aberjona

Project Route/ Alignment

WINCHESTER

Aberjona River

Aberjona River Crossing

Aberjona

TP-37A/MW-37

MH 5

TP-36/MW-36

B-36A

Proposed Optional Manhole 4B

MH 3

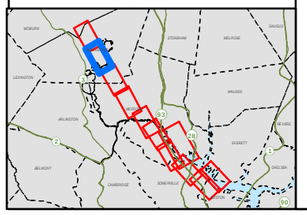
MH 4

Church St

Bacon St

Upper Mystic Lake

INDEX MAP



Legend

- Test Pit Location
- Geotech Boring
- Geotech Boring/ Monitoring Well
- River Sediment Sample
- MA DEP AUL Site
- Approximate Outfall Location
- Proposed Manhole
- Existing Manhole
- Surface Water Sample
- Municipal Boundary
- MWRA Sewer Pipe
- Laydown Yard
- RGP Boundaires Aberjona River
- RGP Boundaires Mystic River Crossing
- RGP Boundaries Mystic River after Amelia Earhart Dam
- RGP Boundary Winter Pond

Soil Type

- Type A
- Type B
- Type C1
- Type C2
- Type D1
- Type E

Map Notes:
Basemap: 2013-2014 Orthophotographs, MassGIS
The information/data provided in this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation or parcel level analysis. The maps should not be used for construction purposes.

1 in = 300 ft

0 150 300 600 Feet

New 115 kV Transmission Line
Woburn Substation to Mystic Substation

Figure 1: Aerial Dewatering Site Plan

Mapsheet 01 of 02

EVERSOURCE ENERGY

Tighe&Bond
Engineers | Environmental Specialists

November 2017

G:\GIS\MA\EversourceEnergy\N0998\Mystic_To_Woburn_Line211-514\MapDocuments\DGP_Siteplan_aerial_SurfaceWaterSampleLocations_Updated_20171120.mxd

Highland Ave

RGP Limit

MH 6

Project Route/ Alignment

North Gateway

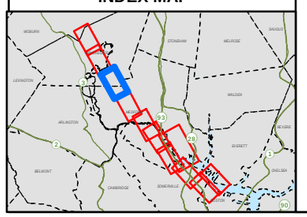
WINCHESTER

MH 7

MEDFORD

Playstead Rd

INDEX MAP



Legend

- Test Pit Location
- Geotech Boring
- Geotech Boring/ Monitoring Well
- River Sediment Sample
- MA DEP AUL Site
- Approximate Outfall Location
- Proposed Manhole
- Existing Manhole
- Surface Water Sample
- Municipal Boundary
- MWRA Sewer Pipe
- Laydown Yard
- RGP Boundaires Aberjona River
- RGP Boundaires Mystic River Crossing
- RGP Boundaries Mystic River after Amelia Earhart Dam
- RGP Boundary Winter Pond

Soil Type

- Type A
- Type B
- Type C1
- Type C2
- Type D1
- Type E

Map Notes:
Basemap: 2013-2014 Orthophotographs, MassGIS
The information/data provided in this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation or parcel level analysis. The maps should not be used for construction purposes.

1 in = 300 ft

0 150 300 600 Feet

New 115 kV Transmission Line Woburn Substation to Mystic Substation

Figure 1: Aerial Dewatering Site Plan

Mapsheet 02 of 02

EVERSOURCE ENERGY

Tighe&Bond
Engineers | Environmental Specialists

November 2017

G:\GIS\MA\EversourceEnergy\N0998\Mystic_To_Woburn_Line211-514\MapDocuments\DGP_Siteplan_aerial_SurfaceWaterSampleLocations_Updated_20171120.mxd

RGP Limit

RGP Boundary Aberjona

Project Route/ Alignment

WINCHESTER

Church St

Bacon St

Aberjona River

Aberjona River Crossing

Aberjona

TP-37A/MW-37

MH 5

TP-36/MW-36

B-36A

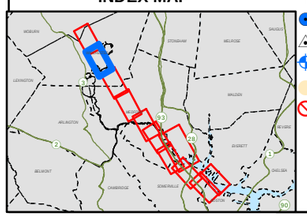
Proposed Optional Manhole 4B

MH 3

MH 4

Upper Mystic Lake

INDEX MAP



Legend

- Test Pit Location
- Geotech Boring
- Geotech Boring/ Monitoring Well
- River Sediment Sample
- MA DEP AUL Site
- Approximate Outfall Location
- Proposed Manhole
- Existing Manhole
- Surface Water Sample
- Municipal Boundary
- MWRA Sewer Pipe
- Laydown Yard

Soil Type

- Type A
- Type B
- Type C1
- Type C2
- Type D1
- Type E

- RGP Boundaires Aberjona River
- RGP Boundaires Mystic River Crossing
- RGP Boundaries Mystic River after Amelia Earhart Dam
- RGP Boundary Winter Pond
- DEP Approved Wellhead Protection Area (Zone II)
- DEP Interim Wellhead Protection Area (IWPA)

- MassDEP Inland Wetlands
- MassDEP Coastal Wetlands
- Protected and Recreational Open Space
- Public Surface Water Supply (PSWS)
- Water Bodies
- High Yield Non Potential Drinking Water Source
- Medium Yield Non Potential Drinking Water Source
- Potentially Productive Medium Yield Aquifer
- Potentially Productive High Yield Aquifer

Map Notes:
Basemap: 2013-2014 Orthophotographs, MassGIS
The information/data provided in this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation or parcel level analysis. The maps should not be used for construction purposes.

1 in = 300 ft

0 150 300 600 Feet

New 115 kV Transmission Line Woburn Substation to Mystic Substation

Figure 2: Priority Resource Map

Mapsheet 01 of 02

EVERSOURCE ENERGY

Tighe&Bond
Engineers | Environmental Specialists

November 2017

G:\GIS\MA\EversourceEnergy\N0998\Mystic_To_Woburn_Line211-514\MapDocuments\DGP_Siteplan_priority_resource_SurfaceWaterSampleLocations_Updated_20171121.mxd

RGP Limit

Project Route/ Alignment

MH 6

MH 7

WINCHESTER

MEDFORD

Symmes Corner

Highland Ave

Marshall Rd

Everell Rd

Stowell Rd

Sargent Rd

Sherwood Rd

Alden Ln

Stanish Ln

Winford Way

Marchant Rd

Town Way

Priscilla Ln

Edgehill Rd

Bruce Rd

Chardon Rd

North Gateway

S Gateway

Ox Pasture

N Gateway

Robinson Rd

Barbara Ln

Arden Rd

Playstead Rd

Grove St

Sanborn St

Sanborn Pl

Ridgefield Rd

Oak Knls

Brooks St

W Chardon Rd

Blanwood Rd

Wickham Rd

Wellington Rd

Main St

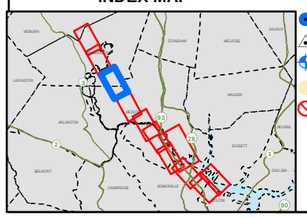
158 ft

150 ft

126 ft

100 ft

INDEX MAP



Legend

- Test Pit Location
- Geotech Boring
- Geotech Boring/ Monitoring Well
- River Sediment Sample
- MA DEP AUL Site
- Approximate Outfall Location
- Proposed Manhole
- Existing Manhole
- Surface Water Sample
- Municipal Boundary
- MWRA Sewer Pipe
- Laydown Yard

Soil Type

- Type A
- Type B
- Type C1
- Type C2
- Type D1
- Type E

- RGP Boundaires Aberjona River
- RGP Boundaires Mystic River Crossing
- RGP Boundaires Mystic River after Amelia Earhart Dam
- RGP Boundary Winter Pond
- DEP Approved Wellhead Protection Area (Zone II)
- DEP Interim Wellhead Protection Area (IWPA)

- MassDEP Inland Wetlands
- MassDEP Coastal Wetlands
- Protected and Recreational Open Space
- Public Surface Water Supply (PSWS)
- Water Bodies
- High Yield Non Potential Drinking Water Source
- Medium Yield Non Potential Drinking Water Source
- Potentially Productive Medium Yield Aquifer
- Potentially Productive High Yield Aquifer

Map Notes:

Basemap: 2013-2014 Orthophotographs, MassGIS

The information/data provided in this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation or parcel level analysis. The maps should not be used for construction purposes.

1 in = 300 ft

0 150 300 600 Feet

New 115 kV Transmission Line
Woburn Substation to Mystic Substation

Figure 2: Priority Resource Map

Mapsheet 02 of 02

EVERSOURCE ENERGY

Tighe&Bond
Engineers | Environmental Specialists

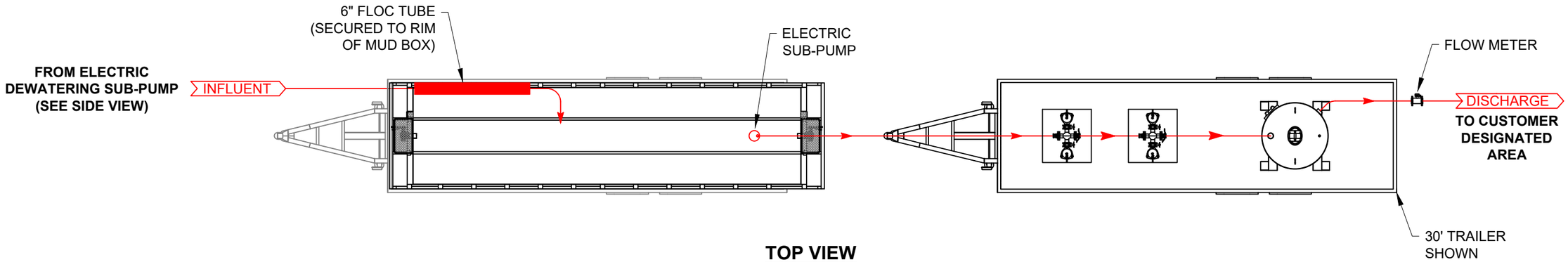
November 2017

G:\GIS\MA\EversourceEnergy\N0998\Mystic_To_Woburn_Line211-514\MapDocuments\DGP_Siteplan_priority_resource_SurfaceWaterSampleLocations_Updated_20171121.mxd

CONFIDENTIAL

PROPRIETARY

TREATMENT SYSTEM 150 GPM



TOP VIEW

220 BBL EZ CLEAN MUD TANK	
Equipment:	EZ Clean Open Top Container
Capacity:	220 BBL (9,240 Gal.)
Dimensions:	33'x8'x6'

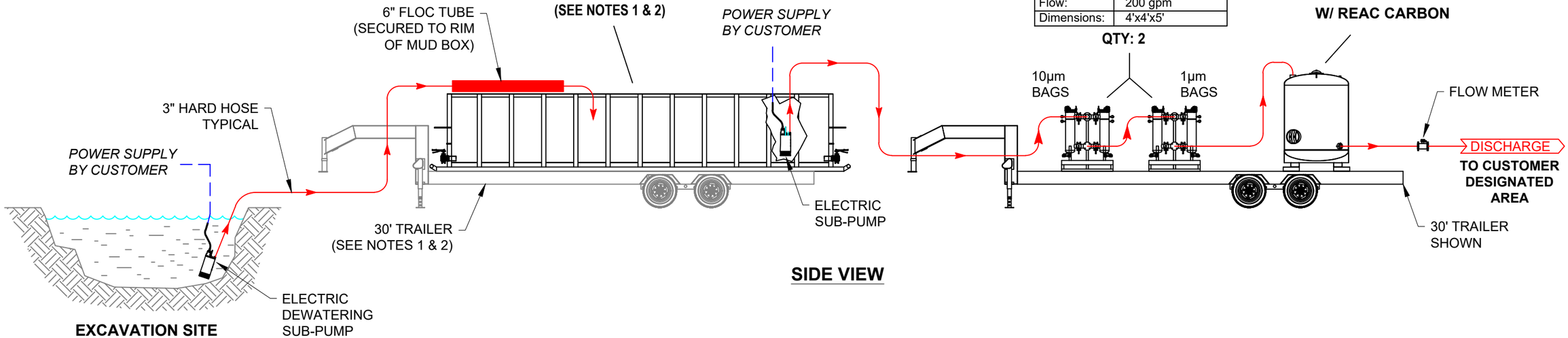
NOTE: MUD BOX MAY DIFFER FROM ONE SHOWN

DUAL BAG FILTER SYSTEM	
Equipment:	L88303FA41523F4DF
Flow:	200 gpm
Dimensions:	4'x4'x5'

QTY: 2

3000 HPV MEDIA VESSEL	
Flow Rate:	150 gpm (Max)
Capacity:	102 cu. ft.
Dimensions:	5' Dia. x 8' Tall

W/ REAC CARBON



SIDE VIEW

EXCAVATION SITE

NOTES:

1. DUE TO TRAILER WEIGHT RESTRICTIONS - MUD BOX MUST BE REMOVED FROM TRAILER DURING OPERATION.
2. MUD BOX MUST BE EMPTIED PRIOR LOADING ONTO TRAILER AND REMAIN EMPTIED DURING TRANSPORT FOR PROJECT RELOCATION.

United Rentals Fluid Solutions

7800 N. DALLAS PARKWAY, SUITE 500
PLANO, TX 75024-4087

TITLE: **TREATMENT SYSTEM 150 GPM**
PROCESS FLOW DIAGRAM

SHEET SIZE: B 11" x 17"	MATERIAL:				
	FINISH:				
CUSTOMER: MIDDLESEX CORP				BRANCH: BOS	
DWG BY: M. BROOKS	DATE: 09-10-18	SCALE: -		SHEET: 1	OF: 1
CKD BY: M. SCOPELLETI	DATE: 09-10-18	DWG No: SKF5387		REV: -	

Tighe&Bond

APPENDIX C

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN MASSACHUSETTS

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Essex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Gloucester, Essex and Manchester
	Piping Plover	Threatened	Coastal Beaches	Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Franklin	Northeastern bulrush	Endangered	Wetlands	Montague, Warwick
	Dwarf wedgemussel	Endangered	Mill River	Whately
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampshire	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Hadley
	Puritan tiger beetle	Threatened	Sandy beaches along the Connecticut River	Northampton and Hadley
	Dwarf wedgemussel	Endangered	Rivers and Streams.	Hatfield, Amherst and Northampton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hampden	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Southwick
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Middlesex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Groton
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Nantucket	Piping Plover	Threatened	Coastal Beaches	Nantucket
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Nantucket
	American burying beetle	Endangered	Upland grassy meadows	Nantucket
	Red Knot[1]	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal Towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

Updated 02/05/2016

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: October 17, 2017
Consultation Code: 05E1NE00-2018-SLI-0163
Event Code: 05E1NE00-2018-E-00412
Project Name: Mystic to Woburn - 115 kV UG Transmission Line

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-0163

Event Code: 05E1NE00-2018-E-00412

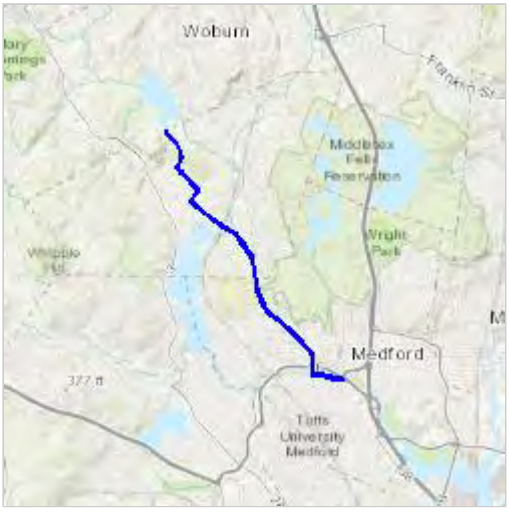
Project Name: Mystic to Woburn - 115 kV UG Transmission Line

Project Type: ** OTHER **

Project Description: This project includes the management of excavation groundwater during the installation of approximately 4.23 miles of a new underground 115 kV electrical transmission line and manholes.

Project Location:

Approximate location of the project can be viewed in Google Maps:
https://www.google.com/maps/place/42.43961099802177N71.13352130056799W



Counties: Middlesex, MA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

Tighe&Bond

APPENDIX D

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Winchester; Street Name: fletcher st; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
WNT.930	Middlesex Canal Earthworks	Fletcher St	Winchester	c 1802
WNT.773		3 Fletcher St	Winchester	r 1895
WNT.774		9 Fletcher St	Winchester	r 1895
WNT.74	Maynard, Lorenzo Tenant House	14-16 Fletcher St	Winchester	c 1900
WNT.775		15 Fletcher St	Winchester	r 1905
WNT.73	Maynard, Lorenzo Tenant House	18-20 Fletcher St	Winchester	c 1900
WNT.72	Maynard, Lorenzo Tenant House	22-24 Fletcher St	Winchester	c 1900
WNT.776		23-25 Fletcher St	Winchester	r 1895
WNT.1174		32 Fletcher St	Winchester	
WNT.1175		38 Fletcher St	Winchester	c 1922
WNT.778		45 Fletcher St	Winchester	r 1895
WNT.779		55 Fletcher St	Winchester	r 1905
WNT.780		61 Fletcher St	Winchester	r 1895
WNT.1178		68 Fletcher St	Winchester	
WNT.1179		70 Fletcher St	Winchester	c 1932
WNT.71	Nickerson, Phineas A. - Smith, Nellie A. House	81 Fletcher St	Winchester	c 1903

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Winchester; Street Name: Bacon st; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
WNT.927	Mystic Valley Parkway - Bacon Street Rotary	Bacon St	Winchester	r 1920
WNT.937	Bacon Street Bridge over Aberjona River	Bacon St	Winchester	1922
WNT.299	Symmes, Theodore House	6 Bacon St	Winchester	1868
WNT.321	Mystic Schoolhouse, Old	10 Bacon St	Winchester	1900
WNT.665		64 Bacon St	Winchester	r 1935
WNT.667		72 Bacon St	Winchester	r 1905
WNT.668		78 Bacon St	Winchester	r 1915
WNT.669		82 Bacon St	Winchester	r 1905
WNT.670		84 Bacon St	Winchester	r 1895
WNT.671		86 Bacon St	Winchester	r 1895
WNT.348	Whitten, Charles F. House	88 Bacon St	Winchester	c 1893
WNT.377	Bradford, Capt. John House	89 Bacon St	Winchester	c 1871
WNT.378	Holt, Stephen A. - Briggs, Bodwell House	91 Bacon St	Winchester	c 1877
WNT.672		92 Bacon St	Winchester	r 1905
WNT.925	Mystic Valley Parkway - Northern Segment	Mystic Valley Pkwy	Winchester	1898
WNT.624		2 Ravenscroft Rd	Winchester	r 1895
WNT.349	Challis, John House	2 Stratford Rd	Winchester	c 1893

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Winchester; Street Name: main St; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
WNT.901	Converse Bridge	Main St	Winchester	1914
WNT.908	Boston and Lowell Railroad Signal Bridge	Main St	Winchester	c 1930
WNT.295	Russell, James W. House	86 Main St	Winchester	c 1872
WNT.296	Symmes, Alice House	208 Main St	Winchester	c 1893
WNT.298	Symmes, Dea. John House	212 Main St	Winchester	c 1807
WNT.300	Symmes, Marshall House	230 Main St	Winchester	c 1817
WNT.301	Symmes, Marshall Tenant House	233 Main St	Winchester	r 1875
WNT.302	Symmes, Walter F. House	243 Main St	Winchester	c 1889
WNT.303	Symmes, Fred M. House	282 Main St	Winchester	c 1880
WNT.304	Mason, Susan F. and Elizabeth N. House	288-290 Main St	Winchester	1905
WNT.305	Wells, Thomas F. House	319 Main St	Winchester	c 1889
WNT.306	Grafton, S. G. House	326 Main St	Winchester	c 1850
WNT.307	Weld, Aaron D. House	336 Main St	Winchester	c 1851
WNT.308	Hayward, A. H. - Dwinell, James F. House	346 Main St	Winchester	c 1844
WNT.270	Plummer, Bard - Lawson, Thomas W. House	366 Main St	Winchester	1853
WNT.271	Wilbur, Hervy House	379 Main St	Winchester	r 1845
WNT.269	Hovey, Josiah - Winn, Dennis House	384 Main St	Winchester	1841
WNT.285	Murdock, John K. House	387 Main St	Winchester	c 1905
WNT.268	Hutchinson, Samuel - Blood, Cyrus House	394-396 Main St	Winchester	c 1840
WNT.267	Sharon House	403 Main St	Winchester	c 1835
WNT.266	Vinton, Alfred - Putnam, Ralph C. House	409 Main St	Winchester	c 1865
WNT.265	Parker, Harrison Barn	410 Main St	Winchester	1865
WNT.263	Vinton, Alfred House	417 Main St	Winchester	c 1854
WNT.262	Simonds, William House	418-420 Main St	Winchester	1877
WNT.1015	McCall Junior High School	458 Main St	Winchester	1932
WNT.309	Winchester Unitarian Church	478 Main St	Winchester	1899
WNT.129	Locatelli, Albert J. Building	522-546 Main St	Winchester	1935

Inv. No.	Property Name	Street	Town	Year
WNT.128	Ripley, Frank L. Block	527-535 Main St	Winchester	1910
WNT.1021	Woolworth, F. W. Building	537-539 Main St	Winchester	1927
WNT.1013	Woolworth, F. W. Company	547-551 Main St	Winchester	c 1930
WNT.1022	Lieberman Block	547-551 Main St	Winchester	r 1890
WNT.1017		552-564 Main St	Winchester	c 1915
WNT.127	Brown and Stanton Block	553-569 Main St	Winchester	1879
WNT.126	White, Col. Samuel Bartlett Building	568-572 Main St	Winchester	r 1889
WNT.1018		576 Main St	Winchester	c 1960
WNT.1019		584 Main St	Winchester	c 1970
WNT.125	Harriman, William House and Harness Shop	600 Main St	Winchester	c 1875
WNT.1020		600 Main St	Winchester	c 1940
WNT.124	Niles, Louiville V. Apartment House	612-626 Main St	Winchester	c 1894
WNT.123	Mystic Valley Garage	632 Main St	Winchester	1910
WNT.530	Marion, Leonard W. Carriage Factory	724 Main St	Winchester	1889
WNT.529	Cutter, Andrew House	735-737 Main St	Winchester	c 1831
WNT.528	Cutter, Henry House	760-762 Main St	Winchester	c 1845
WNT.527	Holt, Stephen A. House	778 Main St	Winchester	c 1861
WNT.1047		805 Main St	Winchester	r 1880
WNT.1048		807 Main St	Winchester	r 1880
WNT.1036		808-810 Main St	Winchester	r 1925
WNT.1049	Farrow, Eugene B. House	809-811 Main St	Winchester	r 1880
WNT.1038	Church, Dr. Benjamin T. Double House	812-814 Main St	Winchester	c 1886
WNT.1050		815-817 Main St	Winchester	r 1880
WNT.1051		823 Main St	Winchester	r 1880
WNT.1052	Cutter House	826-828 Main St	Winchester	r 1880
WNT.1053		831 Main St	Winchester	r 1970
WNT.1037	Farrow, Joshua House	834 Main St	Winchester	c 1870
WNT.1122	Farrow, Joshua Shop	834 Main St	Winchester	
WNT.1054		844 Main St	Winchester	r 1935
WNT.526	Beatty, J. - Lytton, Henry House	846 Main St	Winchester	r 1860
WNT.1055		848-850 Main St	Winchester	r 1890
WNT.1057		864 Main St	Winchester	r 1965
WNT.1058		872-880 Main St	Winchester	r 1925
WNT.1059		881-889 Main St	Winchester	r 1965
WNT.1060		890-892 Main St	Winchester	r 2000
WNT.1061		891-893 Main St	Winchester	r 1890
WNT.1062	Moffet - Benincasa Double House	895-897 Main St	Winchester	r 1920
WNT.525	Moseley, Charles H. House	898 Main St	Winchester	c 1870

Inv. No.	Property Name	Street	Town	Year
WNT.1039	Taylor, Samuel House	905 Main St	Winchester	r 1860
WNT.1063		907 Main St	Winchester	r 1920
WNT.1040	Dowd, Patrick House	910 Main St	Winchester	r 1860
WNT.524	Blanchard and Kendall Wood Company Mill	921 Main St	Winchester	c 1905
WNT.522	Nichols, Stilman House	940-942 Main St	Winchester	c 1851
WNT.1663	Winchester Telephone Exchange	954 Main St	Winchester	1957
WNT.521	Winn, J. F. Fuel Company Office Building	955 Main St	Winchester	1900
WNT.523	Blanchard and Kendall Wood Company Warehouse	955 Main St	Winchester	1905
WNT.520	Bean, George G. Petticoat Factory	959 Main St	Winchester	c 1909
WNT.1645		965-967 Main St	Winchester	c 1914
WNT.1647		977-979 Main St	Winchester	c 1919
WNT.1648		987-989 Main St	Winchester	c 1919
WNT.519	Russell, Charles House	993 Main St	Winchester	1841
WNT.1124	Immaculate Conception Roman Catholic Rectory	1004 Main St	Winchester	1936
WNT.517	Hutchinson, Albert A. Leather Machine Factory	1021 Main St	Winchester	c 1906
WNT.518	Chapman Gravity Spindle Factory	1021 Main St	Winchester	c 1910
WNT.1626		1 Russell Rd	Winchester	1913
WNT.1627		2 Russell Rd	Winchester	c 1914
WNT.1644		49 Russell Rd	Winchester	c 1914

20 Black Brook Road
Aquinnah, MA 02535

Tribal Historic Preservation Office
Wampanoag Tribe of Gay Head (Aquinnah)

Office (508)645-9265
Fax (508)645-3790

April 5, 2017

Daniel P. Rukakoski
53 South Hampton Road
Westfield, MA, 01085-5308
DPRukakoski@tighebond.com
Re: Mystic-Woburn Transmission Line ProjectN-099811-04(5200)

Dear Daniel P. Rukakoski,

The Wampanoag Tribe of Gay Head (Aquinnah) (WTGHA) Tribal Historic Preservation Office (THPO) has received notification of your project form dated. Once reviewed we will notify you of further action which may include any of the following;

- No further comments on the project
- An initial site visit will be scheduled
- Monitoring will be required at a rate of $55.00 per hour in addition to mileage at the current federal rate paid by the proponent (Third party consultants must provide proponent billing information)
- Any archeological surveying may be monitored and requires two weeks advance notice of said survey.

Should you have any questions or concerns please feel free to contact me at bettina@wampanoagtribe.net
The THPO department would like to thank you for adhering to the Section 106 regulations of the National Historic Preservation Act.

In the spirit of Preservation,

Bettina M. Washington

Bettina M. Washington
Tribal Historic Preservation Officer

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1141 Fax (617) 626-1240 Web Site: www.mass.gov/eea/agencies/czm/buar/

March 29, 2017

Mr. Daniel P. Rukakoski
Tighe & Bond, Inc.
53 Southampton Road
Westfield, MA 01085-5308

RE: Mystic-Woburn Transmission Line Project, Bacon Street, Aberjona River, Winchester, MA

Dear Mr.Rukakoski,

The staff of the Massachusetts Board of Underwater Archaeological Resources has reviewed the above referenced project's SHPO/THPO Notification Form and supporting materials submitted by Tighe & Bond, Inc., on behalf of Evesource Energy. We offer the following comments.

The Board has conducted a preliminary review of its files and secondary literature sources to identify known and potential submerged cultural resources in the proposed project area. No record of any underwater archaeological resources was found. The Board notes, however, the area may be generally archaeologically sensitive given its riparian landscape and associated features. The topographical setting is strongly associated with the presence of prehistoric archaeological deposits. However, much of the Aberjona River has undergone extensive prior disturbance and land modification activities (dredging, channelization, landscaping, etc.) which have significantly reduced integrity and/or preservation for submerged cultural resources. The Board finds the project unlikely to adversely affect submerged cultural resources.

However, should heretofore-unknown submerged cultural resources be encountered during the course of the project, the Board expects that the project's sponsor will take steps to limit adverse affects and notify the Board and the Massachusetts Historical Commission, as well as other appropriate agencies, immediately in accordance with the Board's *Policy Guidance for the Discovery of Unanticipated Archaeological Resources*.

The Board appreciates the opportunity to provide these comments as part of the review process. Should you have any questions regarding this letter, please do not hesitate to contact me at the address above, by email at victor.mastone@state.ma.us, or by telephone at (617) 626-1141.

Sincerely,

Victor T. Mastone
Director

/vtm
Cc: Brona Simon, MHC
Ramona Peters, MWT (via email attachment)
Bettina Washington, WTGH/A (via email attachment)

Tighe&Bond

APPENDIX E

Sent: Wednesday, November 29, 2017 4:41 PM
To: Michael E. Martin <MEMartin@tigheBond.com>
Cc: Ruan, Xiaodan (DEP) <xiaodan.ruan@state.ma.us>
Subject: RE: Eversource - Mystic to Woburn RGP Dilution Factors

Hi Michael,
The 7Q10s and the dilution factor calculations that you provided are correct. The receiving waters (Mystic and Aberjona rivers) are not Outstanding Resource Waters so you are all set with MassDEP.

Tighe&Bond
Engineers | Environmental Specialists

Eversource Project **Mystic-Woburn Transmission Project**
US EPA RGP Dilution Factor Calculations

Receiving Water	Effluent Discharge Flow (MGD)	7Q10 Flow (MGD)	Dilution Factor
Mystic River	0.504	2.16	5.29
Aberjona River	0.504	0.968	2.92

$$DF = \frac{QD + QS}{QD}$$

Where:
DF = Dilution Factor
QD = Effluent Discharge Flow Rate (MGD)
QS = 7Q10 Stream Flow Rate (MGD)
MGD = Million Gallons per Day

Please let me know if you have any further questions.
Cathy

Cathy Vakalopoulos, Massachusetts Department of Environmental Protection
1 Winter St., Boston, MA 02108, 617-348-4026

Enter number values in green boxes below

Notes:

Enter values in the units specified

↓

0.968	Q_R = Enter upstream flow in **MGD**
0.504	Q_P = Enter discharge flow in **MGD**
0.968	Downstream 7Q10

Freshwater: Q_R equal to the 7Q10; enter alternate Q_R if approved by the State; enter 0 if no dilution factor approved

Saltwater (estuarine and marine): enter Q_R if approved by the State; enter 0 if no entry

Discharge flow is equal to the design flow or 1 MGD, whichever is less

Only if approved by State as the entry for Q_R; leave 0 if no entry

Enter a dilution factor, if other than zero

↓

2.92

Saltwater (estuarine and marine): only if approved by the State

Leave 0 if no entry

Enter values in the units specified

↓

142	C_d = Enter influent hardness in **mg/L** $CaCO_3$
145	C_s = Enter receiving water hardness in **mg/L** $CaCO_3$

Freshwater only

Enter **receiving water** concentrations in the units specified

↓

7.03	pH in **Standard Units**
17.1	Temperature in **°C**
1.01	Ammonia in **mg/L**
145	Hardness in **mg/L** $CaCO_3$
0	Salinity in **ppt**
0	Antimony in **µg/L**
4.7	Arsenic in **µg/L**
0	Cadmium in **µg/L**
0	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
3.1	Copper in **µg/L**
596	Iron in **µg/L**
0	Lead in **µg/L**
0	Mercury in **µg/L**
0	Nickel in **µg/L**
0	Selenium in **µg/L**
0	Silver in **µg/L**
44.8	Zinc in **µg/L**

pH, temperature, and ammonia required for all discharges

Hardness required for freshwater

Salinity required for saltwater (estuarine and marine)

Metals required for all discharges if present and if dilution factor is > 1

Enter 0 if non-detect or testing not required

Enter **influent** concentrations in the units specified

↓

0	TRC in **µg/L**
0.64	Ammonia in **mg/L**
0	Antimony in **µg/L**
7.8	Arsenic in **µg/L**
0.1	Cadmium in **µg/L**
12	Chromium III in **µg/L**
0	Chromium VI in **µg/L**
14.2	Copper in **µg/L**
3100	Iron in **µg/L**
9	Lead in **µg/L**
0	Mercury in **µg/L**
1.5	Nickel in **µg/L**
0	Selenium in **µg/L**
0.09	Silver in **µg/L**
62	Zinc in **µg/L**
0	Cyanide in **µg/L**
0	Phenol in **µg/L**
0	Carbon Tetrachloride in **µg/L**
0	Tetrachloroethylene in **µg/L**
6.99	Total Phthalates in **µg/L**
3.07	Diethylhexylphthalate in **µg/L**
0.26	Benzo(a)anthracene in **µg/L**
0.29	Benzo(a)pyrene in **µg/L**
0.37	Benzo(b)fluoranthene in **µg/L**
0.14	Benzo(k)fluoranthene in **µg/L**
0.35	Chrysene in **µg/L**
0.05	Dibenzo(a,h)anthracene in **µg/L**
0.22	Indeno(1,2,3-cd)pyrene in **µg/L**
0.7	Methyl-tert butyl ether in **µg/L**

if >1 sample, enter maximum

if >10 samples, may enter 95th percentile

Enter 0 if non-detect or testing not required

Dilution Factor	2.9					
A. Inorganics	TBEL applies if bolded		WQBEL applies if bolded		Compliance Level applies if shown	
Ammonia	**Report**	mg/L	---			
Chloride	**Report**	µg/L	---			
Total Residual Chlorine	0.2	mg/L	**21**	µg/L	50	µg/L
Total Suspended Solids	**30**	mg/L	---			
Antimony	**206**	µg/L	1229	µg/L		
Arsenic	**104**	µg/L	10	µg/L		
Cadmium	**10.2**	µg/L	0.4836	µg/L		
Chromium III	**323**	µg/L	314.5	µg/L		
Chromium VI	**323**	µg/L	22.0	µg/L		
Copper	**242**	µg/L	29.0	µg/L		
Iron	5000	µg/L	**1000**	µg/L		
Lead	**160**	µg/L	16.57	µg/L		
Mercury	**0.739**	µg/L	1.74	µg/L		
Nickel	**1450**	µg/L	194.4	µg/L		
Selenium	**235.8**	µg/L	9.6	µg/L		
Silver	**35.1**	µg/L	28.0	µg/L		
Zinc	**420**	µg/L	361.0	µg/L		
Cyanide	**178**	mg/L	10.0	µg/L	---	µg/L
B. Non-Halogenated VOCs						
Total BTEX	**100**	µg/L	---			
Benzene	**5.0**	µg/L	---			
1,4 Dioxane	**200**	µg/L	---			
Acetone	**7970**	µg/L	---			
Phenol	**1,080**	µg/L	576	µg/L		
C. Halogenated VOCs						
Carbon Tetrachloride	**4.4**	µg/L	3.1	µg/L		
1,2 Dichlorobenzene	**600**	µg/L	---			
1,3 Dichlorobenzene	**320**	µg/L	---			
1,4 Dichlorobenzene	**5.0**	µg/L	---			
Total dichlorobenzene	**---**	µg/L	---			
1,1 Dichloroethane	**70**	µg/L	---			
1,2 Dichloroethane	**5.0**	µg/L	---			
1,1 Dichloroethylene	**3.2**	µg/L	---			
Ethylene Dibromide	**0.05**	µg/L	---			
Methylene Chloride	**4.6**	µg/L	---			
1,1,1 Trichloroethane	**200**	µg/L	---			
1,1,2 Trichloroethane	**5.0**	µg/L	---			
Trichloroethylene	**5.0**	µg/L	---			
Tetrachloroethylene	**5.0**	µg/L	6.3	µg/L		
cis-1,2 Dichloroethylene	**70**	µg/L	---			
Vinyl Chloride	**2.0**	µg/L	---			
D. Non-Halogenated SVOCs						
Total Phthalates	**190**	µg/L	---	µg/L		
Diethylhexyl phthalate	**101**	µg/L	4.2	µg/L		
Total Group I Polycyclic Aromatic Hydrocarbons	**1.0**	µg/L	---			
Benzo(a)anthracene	1.0	µg/L	**0.0073**	µg/L	0.1	µg/L
Benzo(a)pyrene	1.0	µg/L	**0.0073**	µg/L	0.1	µg/L
Benzo(b)fluoranthene	1.0	µg/L	**0.0073**	µg/L	0.1	µg/L
Benzo(k)fluoranthene	1.0	µg/L	**0.0073**	µg/L	0.1	µg/L
Chrysene	1.0	µg/L	**0.0073**	µg/L	0.1	µg/L
Dibenzo(a,h)anthracene	1.0	µg/L	**0.0073**	µg/L	0.1	µg/L
Indeno(1,2,3-cd)pyrene	1.0	µg/L	**0.0073**	µg/L	0.1	µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	**100**	µg/L	---			
Naphthalene	**20**	µg/L	---			
E. Halogenated SVOCs						
Total Polychlorinated Biphenyls	**0.000064**	µg/L	---		0.5	µg/L
Pentachlorophenol	**1.0**	µg/L	---			
F. Fuels Parameters						
Total Petroleum Hydrocarbons	**5.0**	mg/L	---			
Ethanol	**Report**	mg/L	---			
Methyl-tert-Butyl Ether	**70**	µg/L	38	µg/L		
tert-Butyl Alcohol	**120**	µg/L	---			
tert-Amyl Methyl Ether	**90**	µg/L	---			

TABLE 1
Groundwater Results
Eversource: Woburn - Mystic

Analytical Test	Sample Identification / Sample Date	Effluent Limitation	Wedgemere Crossing MW-37 1/11/2017	MW-37 FF 1/11/2017	MW-36 1/11/2017	MW-36 FF 1/11/2017
TPH - mg/L	TPH	5	ND (5)	ND (5)	ND (5)	ND (5)
Total PAHs Group I - ug/L	Benzo(a)Anthracene	0.0073/0.1[(1)]	0.26	0.04	ND (0.05)	ND (0.05)
	Benzo(a)Pyrene	0.0073/0.1[(1)]	0.29	0.03	ND (0.05)	ND (0.05)
	Benzo(b)Fluoranthene	0.0073/0.1[(1)]	0.37	0.04	ND (0.05)	ND (0.05)
	Benzo(k)Fluoranthene	0.0073/0.1[(1)]	0.14	ND (0.05)	ND (0.05)	ND (0.05)
	Chrysene	0.0073/0.1[(1)]	0.35	0.04	ND (0.05)	ND (0.05)
	Dibenzo(a,h)Anthracene	0.0073/0.1[(1)]	0.05	ND (0.05)	ND (0.05)	ND (0.05)
	Indeno(1,2,3-cd)Pyrene	0.0073/0.1[(1)]	0.22	0.02	ND (0.05)	ND (0.05)
	Total PAHs Group I	1.0	1.68	0.17	ND	ND
Total PAHs Group II - ug/L	Acenaphthene	NE	0.21	0.14	ND (0.19)	ND (0.19)
	Acenaphthylene	NE	0.10	ND (0.19)	ND (0.19)	ND (0.19)
	Anthracene	NE	0.23	0.05	ND (0.19)	ND (0.19)
	Benzo(ghi)Perylene	NE	0.21	0.02	ND (0.19)	ND (0.19)
	Fluoranthene	NE	0.78	0.11	ND (0.19)	ND (0.19)
	Fluorene	NE	0.34	0.07	ND (0.19)	ND (0.19)
	Naphthalene	20	0.11	0.11	ND (0.19)	ND (0.19)
	Phenanthrene	NE	0.85	0.16	ND (0.19)	ND (0.19)
	Pyrene	NE	0.76	0.10	ND (0.19)	ND (0.19)
	Total PAHs Group II	100	3.59	0.76	ND	ND
Phthalates - ug/L	Butylbenzylphthalate	NE	0.31	0.36	0.34	0.43
	Bis (2-Ethylhexyl) Phthalate	101	3.07	3.00	2.72	2.02
	Diethylphthalate	NE	0.29	0.27	ND (2.34)	3.85
	Di-n-butylphthalate	NE	0.19	0.43	ND (2.34)	0.69
	Di-n-octylphthalate	NE	ND (2.34)	ND (2.34)	ND (2.34)	ND (2.34)
	Total Phthalates	190	3.86	4.06	3.06	6.99
SVOCs - ug/L	Pentachlorophenol	1.0	ND (0.84)	ND (0.84)	ND (0.84)	ND (0.84)
	All Other SVOCs	NE	< c/s	< c/s	< c/s	< c/s
Metals- ug/L	Antimony	206	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
	Arsenic	104	7.8	3.8	ND (5.0)	ND (5.0)
	Barium	NE	108	131	81.1	72.0
	Beryllium	NE	0.3	0.3	0.1	ND (5.0)
	Cadmium	10.2	0.10	0.05	ND (0.50)	0.03
	Chromium	323	11.6	2.9	2.8	ND (10.0)
	Chromium III	323	12.0	ND (10)	ND (10)	ND (10)
	Lead	160	9.0	ND (2.5)	ND (2.5)	ND (2.5)
	Mercury	0.739	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
	Nickel	1,450	1.5	ND (10.0)	ND (10.0)	ND (10.0)
	Selenium	235.8	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
	Silver	35.1	0.09	ND (0.20)	ND (0.20)	ND (0.20)
	Thallium	NE	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	Vanadium	NE	2.8	ND (10.0)	1.1	ND (10.0)
	Zinc	420	62	20.5	18.8	18.9
	Iron	1,000	3,100	1,650	505	89.6
	Copper	242	14.2	4.2	3.3	ND (5)
Ethanol - ug/L	Ethanol	Report	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dibromoethane - ug/L	1,2-Dibroethane (EDB)	0.05	ND (0.015)	ND (0.015)	ND (0.015)	ND (0.015)
1,4-Dioxane - ug/L	1,4-Dioxane	200	ND (500)	ND (500)	ND (500)	ND (500)
PCB - ug/L	Aroclor-1016	NE	ND (0.09)	ND (0.09)	ND (0.09)	ND (0.09)
	Aroclor-1221	NE	ND (0.09)	ND (0.09)	ND (0.09)	ND (0.09)
	Aroclor-1232	NE	ND (0.09)	ND (0.09)	ND (0.09)	ND (0.09)
	Aroclor-1242	NE	ND (0.09)	ND (0.09)	ND (0.09)	ND (0.09)
	Aroclor-1248	NE	ND (0.09)	ND (0.09)	ND (0.09)	ND (0.09)
	Aroclor-1254	NE	ND (0.09)	ND (0.09)	ND (0.09)	ND (0.09)
	Aroclor-1260	NE	ND (0.09)	ND (0.09)	ND (0.09)	ND (0.09)
	Aroclor-1262	NE	ND (0.09)	ND (0.09)	ND (0.09)	ND (0.09)
	Aroclor-1268	NE	ND (0.09)	ND (0.09)	ND (0.09)	ND (0.09)
	Total PCBs	0.000064/0.5[(1)]	ND	ND	ND	ND
VOCs - ug/L	tert-Butyl Alcohol (TBA)	120	ND (25.0)	ND (25.0)	ND (25.0)	ND (25.0)
	tert-Amyl Methyl Ether (TAME)	90	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	Napthalene	20	0.4	0.4	0.20	0.20
	Carbon Tetrachloride	4.4	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	1,2 Dichlorobenzene (o-DCB)	600	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	1,3 Dichlorobenzene (m-DCB)	320	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	1,4 Dicholorbenzene (p-DCB)	5.0	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	1,1 Dichloroethane (DCA)	70.0	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	1,2 Dichloroethane (DCA)	5.0	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	1,1 Dichloroethene (DCE)	3.2	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	sec-Butylbenzene	NE	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	tert-Butyl Ethyl Ether (TBEE)	NE	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	cis-1,2 Dichloroethene (DCE)	70	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	Methylene Chloride	4.6	0.20	ND (2.0)	ND (2.0)	ND (2.0)
	Tetrachloroethene (PCE)	5.0	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	1,1,1 Trichloro-ethane (TCA)	200	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	1,1,2 Trichloro-ethane (TCA)	5.0	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	Trichloroethene (TCE)	5.0	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
	Methyl tert-Butyl Ether (MtBE)	70	0.70	0.60	ND (1.0)	ND (1.0)
	Acetone	7,970	ND (1.0)	ND (10)	ND (10)	ND (10)
	Vinyl Chloride	2.0	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
BTEX - ug/L	Benzene	5.0	0.20	0.20	0.10	ND (1.0)
	Toluene	NE	0.20	0.20	ND (1.0)	0.10
	Ethylbenzene	NE	0.20	0.20	ND (1.0)	ND (1.0)
	Total Xylenes	NE	0.80	0.70	ND (2.0)	ND (1.0)
	Total BTEX	100	1.40	1.30	0.10	0.10
Classical Chemistry	Chloride (mg/L)	Report	200	240	100	70
	Ammonia (mg/L)	Report	0.64	0.61	ND (0.10)	ND (0.1)
	Hexavalent Chromium (ug/L)	323	ND (10)	ND (10)	ND (10)	ND (10)
	Total Cyanide (ug/L)	178	ND (5.00)	ND (5.00)	ND (5.00)	ND (5.00)
	Phenols (ug/L)	1,080	ND (100)	ND (100)	ND (100)	ND (100)
	Total Residual Chlorine (ug/L)	21/50[(1)]	ND (10)	ND (10)	ND (10)	ND (10)
	Total Suspended Solids (ug/L)	30,000	1,640,000	13,000	116,000	ND (5,000)
	Hardness (ug/L)	NE	NA	NA	142,000	NA

Notes:
1: The second standard is the compliance level
VOCs = Volatile Organic Compounds
SVOCs = Semi-Volatile Organic Compounds
TPH = Total Petroleum Hydrocarbons
PCBs = Polychlorinated biphenyls
mg/L= milligrams per kilogram (ppm)
ug/L= micrograms per kilogram (ppb)
< xx = not detected above the indicated laboratory method detection limit
c/s = compound specific
NE = Not Established
NA = Not Analyzed
ND = Not Detected
** - Effluent limits calculated using the US EPA's Dilution Factor and Effluent Limitation Calculations for Massachusetts Form (Appendix V)*
Red text = exceeds RGP limit
FW- Freshwater

TABLE 2

Surface Water Results

Eversource: Woburn - Mystic

Analytical Test	Sample Identification	Effluent Limitation	Aberjona
	Sample Date		**11/15/2017**
Metals (ug/L)	Arsenic	104	4.7
	Cadmium	10.2	ND(2)
	Chromium	NE	ND(4)
	Chromium III	323	ND(10)
	Copper	242	3.1
	Iron	1,000	596
	Lead	160	ND(4)
	Nickel	1,450	ND(4)
	Silver	35.1	ND(1)
	Zinc	420	44.8
Classical Chemistry	Ammonia as N (mg/L)	Report	1.01
	Hexavalent Chromium (ug/L)	323	ND(10)
	pH	NE	7.03
	Hardness (ug/L)	NE	145,000

Notes:

mg/L= milligrams per kilogram (ppm)

ug/L= micrograms per kilogram (ppb)

NE = Not Established

NA = Not Analyzed

ND = Not Detected

** - Effluent limits from NPDES General Permit for Remediation Activity Discharges DRAFT at https://www3.epa.gov/region1/npdes/remediation/2016DraftPermit.pdf*

Tighe&Bond

APPENDIX F

CERTIFICATE OF ANALYSIS

Michael Martin
Tighe & Bond
4 Barlows Landing Road, Unit 15
Pocasset, MA 02559

REVIEWED
By ESS Laboratory at 5:56 pm, Jan 20, 2017

RE: Woburn to Mystic - RGP/MCP (N-0998-11-13)
ESS Laboratory Work Order Number: 1701214

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state tandards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

Subcontracted Analyses

RI Analytical Laboratories, Inc. - Warwick, RI	Chloride

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP

ESS Laboratory Work Order: 1701214

SAMPLE RECEIPT

The following samples were received on January 11, 2017 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Lab Number	Sample Name	Matrix	Analysis
1701214-01	MW-37	Ground Water	§, 1664A, 2540D, 420.1, 4500 CN CE, 4500 NH3 G, 4500-Cl E, 6010C, 7010, 7196A, 7470A, 8011, 8015, 8082A, 8260B, 8270D SIM
1701214-02	MW-37 FF	Ground Water	§, 1664A, 2540D, 420.1, 4500 CN CE, 4500 NH3 G, 4500-Cl E, 6010C, 7010, 7196A, 7470A, 8011, 8015, 8082A, 8260B, 8270D SIM
1701214-03	MW-36	Ground Water	§, 1664A, 2540D, 420.1, 4500 CN CE, 4500 NH3 G, 4500-Cl E, 6010C, 7010, 7196A, 7470A, 8011, 8015, 8082A, 8260B, 8270D SIM
1701214-04	MW-36 FF	Ground Water	§, 1664A, 2540D, 420.1, 4500 CN CE, 4500 NH3 G, 4500-Cl E, 6010C, 7010, 7196A, 7470A, 8011, 8015, 8082A, 8260B, 8270D SIM
1701214-05	MW-505B FF	Ground Water	§, 1664A, 2540D, 4500 CN CE, 4500 NH3 G, 4500-Cl E, 6010C, 7010, 7196A, 7470A, 8011, 8015, 8082A, 8260B, 8270D SIM
1701214-06	MW-505B	Ground Water	6010C, 7010, 7470A

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP

ESS Laboratory Work Order: 1701214

PROJECT NARRATIVE

8260B Volatile Organic Compounds

1701214-01	**Present in Method Blank (B).**
	Naphthalene
1701214-02	**Present in Method Blank (B).**
	Naphthalene
1701214-03	**Present in Method Blank (B).**
	Naphthalene
1701214-04	**Present in Method Blank (B).**
	Naphthalene

8270D(SIM) Semi-Volatile Organic Compounds

1701214-01	**Present in Method Blank (B).**
	bis(2-Ethylhexyl)phthalate , Butylbenzylphthalate
1701214-02	**Present in Method Blank (B).**
	bis(2-Ethylhexyl)phthalate , Butylbenzylphthalate
1701214-03	**Present in Method Blank (B).**
	bis(2-Ethylhexyl)phthalate , Butylbenzylphthalate
1701214-04	**Present in Method Blank (B).**
	bis(2-Ethylhexyl)phthalate , Butylbenzylphthalate
1701214-05	**Present in Method Blank (B).**
	bis(2-Ethylhexyl)phthalate , Butylbenzylphthalate
1701214-05	**Surrogate recovery(ies) above upper control limit (S+).**
	2,4,6-Tribromophenol (131% @ 15-110%)
C7A0148-TUN1	**Benzidine tailing factor >2.**
C7A0164-CCV1	**Continuing Calibration %Diff/Drift is above control limit (CD+).**
	Butylbenzylphthalate (22% @ %), Di-n-octylphthalate (28% @ %)
CA71116-BS1	**Blank Spike recovery is above upper control limit (B+).**
	bis(2-Ethylhexyl)phthalate (146% @ 40-140%)
CA71116-BSD1	**Blank Spike recovery is above upper control limit (B+).**
	bis(2-Ethylhexyl)phthalate (143% @ 40-140%)
CA71116-BSD1	**Relative percent difference for duplicate is outside of criteria (D+).**
	Naphthalene (21% @ 20%)

Total Metals

1701214-01	**Present in Method Blank (B).**
	Zinc
1701214-02	**Present in Method Blank (B).**
	Zinc
1701214-03	**Present in Method Blank (B).**
	Iron , Zinc
1701214-04	**Present in Method Blank (B).**
	Iron , Zinc

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
ESS Laboratory Work Order: 1701214

1701214-05	**Present in Method Blank (B).**
	Zinc
1701214-06	**Present in Method Blank (B).**
	Zinc

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP

ESS Laboratory Work Order: 1701214

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP

ESS Laboratory Work Order: 1701214

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1701214-01 through 1701214-06**

Matrices: (X) Ground Water/Surface Water ( ) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

(X) 8260 VOC CAM II A	( ) 7470/7471 Hg CAM III B	( ) MassDEP VPH CAM IV A	( ) 8081 Pesticides CAM V B	(X) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(X) 8270 SVOC CAM II B	(X) 7010 Metals CAM III C	( ) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) 8330 Explosives CAM VIII A	( ) TO-15 VOC CAM IX B
(X) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	(X) 8082 PCB CAM V A	( ) 6860 Perchlorate CAM VIII B	(X) 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ( )
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes ( ) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ( )

Responses to Questions G, H and I below are required for "'Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes (X) No ( )*
	***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (X)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ( ) No (X)*

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard

Date: January 20, 2017

Printed Name: Laurel Stoddard

Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37
Date Sampled: 01/11/17 10:20
Percent Solids: N/A

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (5.0)	0.6	7010		1	KJK	01/17/17 22:22	50	25	CA71146
Arsenic	**7.8** (5.0)	0.4	7010		1	KJK	01/14/17 15:59	50	25	CA71146
Barium	**108** (25.0)	1.5	6010C		1	KJK	01/13/17 3:39	50	25	CA71146
Beryllium	**J 0.3** (0.5)	0.1	6010C		1	KJK	01/13/17 3:39	50	25	CA71146
Cadmium	**J 0.1** (0.5)	0.03	7010		1	KJK	01/17/17 15:53	50	25	CA71146
Chromium	**11.6** (10.0)	1.5	6010C		1	KJK	01/13/17 3:39	50	25	CA71146
Chromium III	**12** (10)		6010C		1	JLK	01/13/17 3:39	1	1	[CALC]
Copper	**14.2** (5.0)	2.0	6010C		1	KJK	01/13/17 3:39	50	25	CA71146
Iron	**3100** (50.0)	11.5	6010C		1	KJK	01/13/17 3:39	50	25	CA71146
Lead	**9.0** (2.5)	0.5	7010		1	KJK	01/14/17 22:07	50	25	CA71146
Mercury	ND (0.20)	0.12	7470A		1	MJV	01/13/17 12:48	20	40	CA71147
Nickel	**J 1.5** (10.0)	1.0	6010C		1	KJK	01/13/17 3:39	50	25	CA71146
Selenium	ND (5.0)	0.6	7010		1	KJK	01/15/17 3:36	50	25	CA71146
Silver	**J 0.09** (0.2)	0.08	7010		1	KJK	01/17/17 18:59	50	25	CA71146
Thallium	ND (1.0)	0.5	7010		1	KJK	01/14/17 18:42	50	25	CA71146
Vanadium	**J 2.8** (10.0)	1.0	6010C		1	KJK	01/13/17 3:39	50	25	CA71146
Zinc	**B 62.0** (25.0)	4.5	6010C		1	KJK	01/13/17 3:39	50	25	CA71146

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37
Date Sampled: 01/11/17 10:20
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 1/13/17 9:30
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)	0.03	8082A		1	01/13/17 13:47		CA71203
Aroclor 1221	ND (0.09)	0.03	8082A		1	01/13/17 13:47		CA71203
Aroclor 1232	ND (0.09)	0.03	8082A		1	01/13/17 13:47		CA71203
Aroclor 1242	ND (0.09)	0.03	8082A		1	01/13/17 13:47		CA71203
Aroclor 1248	ND (0.09)	0.03	8082A		1	01/13/17 13:47		CA71203
Aroclor 1254	ND (0.09)	0.03	8082A		1	01/13/17 13:47		CA71203
Aroclor 1260	ND (0.09)	0.03	8082A		1	01/13/17 13:47		CA71203
Aroclor 1262	ND (0.09)	0.03	8082A		1	01/13/17 13:47		CA71203
Aroclor 1268	ND (0.09)	0.03	8082A		1	01/13/17 13:47		CA71203

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*60 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*62 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*62 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*68 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37
Date Sampled: 01/11/17 10:20
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1-Trichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
1,1,2-Trichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
1,1-Dichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
1,1-Dichloroethene	ND (1.0)	0.3	8260B		1	01/12/17 18:19	C7A0161	CA71231
1,2-Dibromoethane	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
1,2-Dichlorobenzene	ND (1.0)	0.1	8260B		1	01/12/17 18:19	C7A0161	CA71231
1,2-Dichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
1,3-Dichlorobenzene	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
1,4-Dichlorobenzene	ND (1.0)	0.1	8260B		1	01/12/17 18:19	C7A0161	CA71231
1,4-Dioxane - Screen	ND (500)	190	8260B		1	01/12/17 18:19	C7A0161	CA71231
Acetone	ND (10.0)	2.7	8260B		1	01/12/17 18:19	C7A0161	CA71231
Benzene	**J 0.2** (1.0)	0.1	8260B		1	01/12/17 18:19	C7A0161	CA71231
Carbon Tetrachloride	ND (1.0)	0.1	8260B		1	01/12/17 18:19	C7A0161	CA71231
cis-1,2-Dichloroethene	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
Ethylbenzene	**J 0.2** (1.0)	0.1	8260B		1	01/12/17 18:19	C7A0161	CA71231
Methyl tert-Butyl Ether	**J 0.7** (1.0)	0.3	8260B		1	01/12/17 18:19	C7A0161	CA71231
Methylene Chloride	**J 0.2** (2.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
Naphthalene	**B, J 0.4** (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
Tertiary-amyl methyl ether	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
Tertiary-butyl Alcohol	ND (25.0)	10.0	8260B		1	01/12/17 18:19	C7A0161	CA71231
Tetrachloroethene	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
Toluene	**J 0.2** (1.0)	0.1	8260B		1	01/12/17 18:19	C7A0161	CA71231
Trichloroethene	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
Vinyl Chloride	ND (1.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231
Xylene O	**J 0.2** (1.0)	0.1	8260B		1	01/12/17 18:19	C7A0161	CA71231
Xylene P,M	**J 0.6** (2.0)	0.2	8260B		1	01/12/17 18:19	C7A0161	CA71231

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*104 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*96 %*		*70-130*
Surrogate: Dibromofluoromethane	*98 %*		*70-130*
Surrogate: Toluene-d8	*103 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37
Date Sampled: 01/11/17 10:20
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 1/12/17 10:15

8270D(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	**0.21** (0.19)	0.04	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Acenaphthylene	**J 0.10** (0.19)	0.03	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Anthracene	**0.23** (0.19)	0.03	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Benzo(a)anthracene	**0.26** (0.05)	0.01	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Benzo(a)pyrene	**0.29** (0.05)	0.01	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Benzo(b)fluoranthene	**0.37** (0.05)	0.02	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Benzo(g,h,i)perylene	**0.21** (0.19)	0.02	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Benzo(k)fluoranthene	**0.14** (0.05)	0.02	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
bis(2-Ethylhexyl)phthalate	**B 3.07** (2.34)	0.19	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Butylbenzylphthalate	**B, J 0.31** (2.34)	0.19	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Chrysene	**0.35** (0.05)	0.01	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Dibenzo(a,h)Anthracene	**0.05** (0.05)	0.02	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Diethylphthalate	**J 0.29** (2.34)	0.19	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Dimethylphthalate	ND (2.34)	0.19	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Di-n-butylphthalate	**J 0.19** (2.34)	0.19	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Di-n-octylphthalate	ND (2.34)	0.19	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Fluoranthene	**0.78** (0.19)	0.02	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Fluorene	**0.34** (0.19)	0.03	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Indeno(1,2,3-cd)Pyrene	**0.22** (0.05)	0.02	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Naphthalene	**J 0.11** (0.19)	0.04	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Pentachlorophenol	ND (0.84)	0.30	8270D SIM		1	01/19/17 1:59	C7A0164	CA71116
Phenanthrene	**0.85** (0.19)	0.04	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116
Pyrene	**0.76** (0.19)	0.02	8270D SIM		1	01/12/17 22:03	C7A0164	CA71116

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*46 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*108 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*77 %*		*30-130*
Surrogate: Nitrobenzene-d5	*76 %*		*30-130*
Surrogate: p-Terphenyl-d14	*93 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37
Date Sampled: 01/11/17 10:20
Percent Solids: N/A

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-01
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.64** (0.10)		4500 NH3 G		1	JLK	01/16/17 17:19	mg/L	CA71301
Chloride	**200** (10.0)		§		1	SUB	01/13/17 19:51	mg/L	CA71826
Hexavalent Chromium	ND (10)		7196A		1	JLK	01/11/17 21:00	ug/L	CA71144
Phenols	ND (100)	30	420.1		1	JLK	01/13/17 17:00	ug/L	CA71336
Total Cyanide (LL)	ND (5.00)	1.80	4500 CN CE		1	EEM	01/13/17 11:40	ug/L	CA71317
Total Petroleum Hydrocarbon	ND (5)		1664A		1	CRR	01/16/17 14:42	mg/L	CA71306
Total Residual Chlorine	ND (10)		4500-Cl E		1	JLK	01/11/17 20:08	ug/L	CA71143
Total Suspended Solids	**164000** (10000)		2540D		1	JLK	01/12/17 18:08	ug/L	CA71229

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37
Date Sampled: 01/11/17 10:20
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: JXS
Prepared: 1/13/17 12:00

8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,2-Dibromoethane	ND (0.015)	0.005	8011		1	JXS	01/13/17 18:35		CA71322

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*110 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37
Date Sampled: 01/11/17 10:20
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: DPS
Prepared: 1/12/17 14:30

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		8015		1	DPS	01/13/17 16:56		CA71246

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37 FF
Date Sampled: 01/11/17 10:50
Percent Solids: N/A

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (5.0)	0.6	7010		1	KJK	01/17/17 22:28	50	25	CA71146
Arsenic	**J 3.8** (5.0)	0.4	7010		1	KJK	01/14/17 16:05	50	25	CA71146
Barium	**131** (25.0)	1.5	6010C		1	KJK	01/13/17 3:43	50	25	CA71146
Beryllium	**J 0.3** (0.5)	0.1	6010C		1	KJK	01/13/17 3:43	50	25	CA71146
Cadmium	**J 0.05** (0.5)	0.03	7010		1	KJK	01/17/17 15:59	50	25	CA71146
Chromium	**J 2.9** (10.0)	1.5	6010C		1	KJK	01/13/17 3:43	50	25	CA71146
Chromium III	ND (10)		6010C		1	JLK	01/13/17 3:43	1	1	[CALC]
Copper	**J 4.2** (5.0)	2.0	6010C		1	KJK	01/13/17 3:43	50	25	CA71146
Iron	**1650** (50.0)	11.5	6010C		1	KJK	01/13/17 3:43	50	25	CA71146
Lead	ND (2.5)	0.5	7010		1	KJK	01/14/17 22:12	50	25	CA71146
Mercury	ND (0.20)	0.12	7470A		1	MJV	01/13/17 12:50	20	40	CA71147
Nickel	ND (10.0)	1.0	6010C		1	KJK	01/13/17 3:43	50	25	CA71146
Selenium	ND (5.0)	0.6	7010		1	KJK	01/15/17 3:41	50	25	CA71146
Silver	ND (0.2)	0.08	7010		1	KJK	01/17/17 19:04	50	25	CA71146
Thallium	ND (1.0)	0.5	7010		1	KJK	01/14/17 18:47	50	25	CA71146
Vanadium	ND (10.0)	1.0	6010C		1	KJK	01/13/17 3:43	50	25	CA71146
Zinc	**B, J 20.5** (25.0)	4.5	6010C		1	KJK	01/13/17 3:43	50	25	CA71146

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37 FF
Date Sampled: 01/11/17 10:50
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 1/13/17 9:30
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)	0.03	8082A		1	01/13/17 14:06		CA71203
Aroclor 1221	ND (0.09)	0.03	8082A		1	01/13/17 14:06		CA71203
Aroclor 1232	ND (0.09)	0.03	8082A		1	01/13/17 14:06		CA71203
Aroclor 1242	ND (0.09)	0.03	8082A		1	01/13/17 14:06		CA71203
Aroclor 1248	ND (0.09)	0.03	8082A		1	01/13/17 14:06		CA71203
Aroclor 1254	ND (0.09)	0.03	8082A		1	01/13/17 14:06		CA71203
Aroclor 1260	ND (0.09)	0.03	8082A		1	01/13/17 14:06		CA71203
Aroclor 1262	ND (0.09)	0.03	8082A		1	01/13/17 14:06		CA71203
Aroclor 1268	ND (0.09)	0.03	8082A		1	01/13/17 14:06		CA71203

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*66 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*72 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*68 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*71 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37 FF
Date Sampled: 01/11/17 10:50
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1-Trichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
1,1,2-Trichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
1,1-Dichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
1,1-Dichloroethene	ND (1.0)	0.3	8260B		1	01/12/17 18:46	C7A0161	CA71231
1,2-Dibromoethane	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
1,2-Dichlorobenzene	ND (1.0)	0.1	8260B		1	01/12/17 18:46	C7A0161	CA71231
1,2-Dichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
1,3-Dichlorobenzene	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
1,4-Dichlorobenzene	ND (1.0)	0.1	8260B		1	01/12/17 18:46	C7A0161	CA71231
1,4-Dioxane - Screen	ND (500)	190	8260B		1	01/12/17 18:46	C7A0161	CA71231
Acetone	ND (10.0)	2.7	8260B		1	01/12/17 18:46	C7A0161	CA71231
Benzene	**J 0.2** (1.0)	0.1	8260B		1	01/12/17 18:46	C7A0161	CA71231
Carbon Tetrachloride	ND (1.0)	0.1	8260B		1	01/12/17 18:46	C7A0161	CA71231
cis-1,2-Dichloroethene	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
Ethylbenzene	**J 0.2** (1.0)	0.1	8260B		1	01/12/17 18:46	C7A0161	CA71231
Methyl tert-Butyl Ether	**J 0.6** (1.0)	0.3	8260B		1	01/12/17 18:46	C7A0161	CA71231
Methylene Chloride	ND (2.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
Naphthalene	**B, J 0.4** (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
Tertiary-amyl methyl ether	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
Tertiary-butyl Alcohol	ND (25.0)	10.0	8260B		1	01/12/17 18:46	C7A0161	CA71231
Tetrachloroethene	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
Toluene	**J 0.2** (1.0)	0.1	8260B		1	01/12/17 18:46	C7A0161	CA71231
Trichloroethene	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
Vinyl Chloride	ND (1.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231
Xylene O	**J 0.2** (1.0)	0.1	8260B		1	01/12/17 18:46	C7A0161	CA71231
Xylene P,M	**J 0.5** (2.0)	0.2	8260B		1	01/12/17 18:46	C7A0161	CA71231

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*103 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*96 %*		*70-130*
Surrogate: Dibromofluoromethane	*100 %*		*70-130*
Surrogate: Toluene-d8	*102 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37 FF
Date Sampled: 01/11/17 10:50
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 1/12/17 10:15

8270D(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	**J 0.14** (0.19)	0.04	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Acenaphthylene	ND (0.19)	0.03	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Anthracene	**J 0.05** (0.19)	0.03	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Benzo(a)anthracene	**J 0.04** (0.05)	0.01	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Benzo(a)pyrene	**J 0.03** (0.05)	0.01	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Benzo(b)fluoranthene	**J 0.04** (0.05)	0.02	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Benzo(g,h,i)perylene	**J 0.02** (0.19)	0.02	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Benzo(k)fluoranthene	ND (0.05)	0.02	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
bis(2-Ethylhexyl)phthalate	**B 3.00** (2.34)	0.19	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Butylbenzylphthalate	**B, J 0.36** (2.34)	0.19	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Chrysene	**J 0.04** (0.05)	0.01	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Dibenzo(a,h)Anthracene	ND (0.05)	0.02	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Diethylphthalate	**J 0.27** (2.34)	0.19	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Dimethylphthalate	ND (2.34)	0.19	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Di-n-butylphthalate	**J 0.43** (2.34)	0.19	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Di-n-octylphthalate	ND (2.34)	0.19	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Fluoranthene	**J 0.11** (0.19)	0.02	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Fluorene	**J 0.07** (0.19)	0.03	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Indeno(1,2,3-cd)Pyrene	**J 0.02** (0.05)	0.02	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Naphthalene	**J 0.11** (0.19)	0.04	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Pentachlorophenol	ND (0.84)	0.30	8270D SIM		1	01/19/17 2:48	C7A0164	CA71116
Phenanthrene	**J 0.16** (0.19)	0.04	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116
Pyrene	**J 0.10** (0.19)	0.02	8270D SIM		1	01/12/17 22:51	C7A0164	CA71116

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*55 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*108 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*83 %*		*30-130*
Surrogate: Nitrobenzene-d5	*84 %*		*30-130*
Surrogate: p-Terphenyl-d14	*91 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37 FF
Date Sampled: 01/11/17 10:50
Percent Solids: N/A

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-02
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**0.61** (0.10)		4500 NH3 G		1	JLK	01/16/17 17:23	mg/L	CA71301
Chloride	**240** (10.0)		§		1	SUB	01/13/17 20:05	mg/L	CA71826
Hexavalent Chromium	ND (10)		7196A		1	JLK	01/11/17 21:00	ug/L	CA71144
Phenols	ND (100)	30	420.1		1	JLK	01/13/17 17:00	ug/L	CA71336
Total Cyanide (LL)	ND (5.00)	1.80	4500 CN CE		1	EEM	01/13/17 11:40	ug/L	CA71317
Total Petroleum Hydrocarbon	ND (5)		1664A		1	CRR	01/16/17 14:42	mg/L	CA71306
Total Residual Chlorine	ND (10)		4500-Cl E		1	JLK	01/11/17 20:08	ug/L	CA71143
Total Suspended Solids	**13000** (5000)		2540D		1	JLK	01/12/17 18:08	ug/L	CA71229

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37 FF
Date Sampled: 01/11/17 10:50
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: JXS
Prepared: 1/13/17 12:00

8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,2-Dibromoethane	ND (0.015)	0.005	8011		1	JXS	01/13/17 19:04		CA71322

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*108 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-37 FF
Date Sampled: 01/11/17 10:50
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: DPS
Prepared: 1/12/17 14:30

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		8015		1	DPS	01/13/17 17:19		CA71246

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36
Date Sampled: 01/11/17 11:20
Percent Solids: N/A

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-03
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (5.0)	0.6	7010		1	KJK	01/17/17 22:34	50	25	CA71146
Arsenic	ND (5.0)	0.4	7010		1	KJK	01/14/17 16:11	50	25	CA71146
Barium	**81.1** (25.0)	1.5	6010C		1	KJK	01/13/17 3:47	50	25	CA71146
Beryllium	**J 0.1** (0.5)	0.1	6010C		1	KJK	01/13/17 3:47	50	25	CA71146
Cadmium	ND (0.5)	0.03	7010		1	KJK	01/17/17 16:05	50	25	CA71146
Chromium	**J 2.8** (10.0)	1.5	6010C		1	KJK	01/13/17 3:47	50	25	CA71146
Chromium III	ND (10)		6010C		1	JLK	01/13/17 3:47	1	1	[CALC]
Copper	**J 3.3** (5.0)	2.0	6010C		1	KJK	01/13/17 3:47	50	25	CA71146
Iron	**B 505** (50.0)	11.5	6010C		1	KJK	01/13/17 3:47	50	25	CA71146
Lead	ND (2.5)	0.5	7010		1	KJK	01/14/17 22:30	50	25	CA71146
Mercury	ND (0.20)	0.12	7470A		1	MJV	01/13/17 12:52	20	40	CA71147
Nickel	ND (10.0)	1.0	6010C		1	KJK	01/13/17 3:47	50	25	CA71146
Selenium	ND (5.0)	0.6	7010		1	KJK	01/15/17 3:47	50	25	CA71146
Silver	ND (0.2)	0.08	7010		1	KJK	01/17/17 19:10	50	25	CA71146
Thallium	ND (1.0)	0.5	7010		1	KJK	01/14/17 18:53	50	25	CA71146
Vanadium	**J 1.1** (10.0)	1.0	6010C		1	KJK	01/13/17 3:47	50	25	CA71146
Zinc	**B, J 18.8** (25.0)	4.5	6010C		1	KJK	01/13/17 3:47	50	25	CA71146

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36
Date Sampled: 01/11/17 11:20
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 1/13/17 9:30
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)	0.03	8082A		1	01/13/17 14:25		CA71203
Aroclor 1221	ND (0.09)	0.03	8082A		1	01/13/17 14:25		CA71203
Aroclor 1232	ND (0.09)	0.03	8082A		1	01/13/17 14:25		CA71203
Aroclor 1242	ND (0.09)	0.03	8082A		1	01/13/17 14:25		CA71203
Aroclor 1248	ND (0.09)	0.03	8082A		1	01/13/17 14:25		CA71203
Aroclor 1254	ND (0.09)	0.03	8082A		1	01/13/17 14:25		CA71203
Aroclor 1260	ND (0.09)	0.03	8082A		1	01/13/17 14:25		CA71203
Aroclor 1262	ND (0.09)	0.03	8082A		1	01/13/17 14:25		CA71203
Aroclor 1268	ND (0.09)	0.03	8082A		1	01/13/17 14:25		CA71203

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*54 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*56 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*67 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*69 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36
Date Sampled: 01/11/17 11:20
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1-Trichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
1,1,2-Trichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
1,1-Dichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
1,1-Dichloroethene	ND (1.0)	0.3	8260B		1	01/12/17 19:13	C7A0161	CA71231
1,2-Dibromoethane	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
1,2-Dichlorobenzene	ND (1.0)	0.1	8260B		1	01/12/17 19:13	C7A0161	CA71231
1,2-Dichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
1,3-Dichlorobenzene	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
1,4-Dichlorobenzene	ND (1.0)	0.1	8260B		1	01/12/17 19:13	C7A0161	CA71231
1,4-Dioxane - Screen	ND (500)	190	8260B		1	01/12/17 19:13	C7A0161	CA71231
Acetone	ND (10.0)	2.7	8260B		1	01/12/17 19:13	C7A0161	CA71231
Benzene	**J 0.1** (1.0)	0.1	8260B		1	01/12/17 19:13	C7A0161	CA71231
Carbon Tetrachloride	ND (1.0)	0.1	8260B		1	01/12/17 19:13	C7A0161	CA71231
cis-1,2-Dichloroethene	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
Ethylbenzene	ND (1.0)	0.1	8260B		1	01/12/17 19:13	C7A0161	CA71231
Methyl tert-Butyl Ether	ND (1.0)	0.3	8260B		1	01/12/17 19:13	C7A0161	CA71231
Methylene Chloride	ND (2.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
Naphthalene	**B, J 0.2** (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
Tertiary-amyl methyl ether	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
Tertiary-butyl Alcohol	ND (25.0)	10.0	8260B		1	01/12/17 19:13	C7A0161	CA71231
Tetrachloroethene	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
Toluene	ND (1.0)	0.1	8260B		1	01/12/17 19:13	C7A0161	CA71231
Trichloroethene	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
Vinyl Chloride	ND (1.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231
Xylene O	ND (1.0)	0.1	8260B		1	01/12/17 19:13	C7A0161	CA71231
Xylene P,M	ND (2.0)	0.2	8260B		1	01/12/17 19:13	C7A0161	CA71231

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*104 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*93 %*		*70-130*
Surrogate: Dibromofluoromethane	*101 %*		*70-130*
Surrogate: Toluene-d8	*100 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36
Date Sampled: 01/11/17 11:20
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 1/12/17 10:15

8270D(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	ND (0.19)	0.04	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Acenaphthylene	ND (0.19)	0.03	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Anthracene	ND (0.19)	0.03	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Benzo(a)anthracene	ND (0.05)	0.01	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Benzo(a)pyrene	ND (0.05)	0.01	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Benzo(b)fluoranthene	ND (0.05)	0.02	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Benzo(g,h,i)perylene	ND (0.19)	0.02	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Benzo(k)fluoranthene	ND (0.05)	0.02	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
bis(2-Ethylhexyl)phthalate	**B 2.72** (2.34)	0.19	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Butylbenzylphthalate	**B, J 0.34** (2.34)	0.19	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Chrysene	ND (0.05)	0.01	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Dibenzo(a,h)Anthracene	ND (0.05)	0.02	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Diethylphthalate	ND (2.34)	0.19	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Dimethylphthalate	ND (2.34)	0.19	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Di-n-butylphthalate	ND (2.34)	0.19	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Di-n-octylphthalate	ND (2.34)	0.19	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Fluoranthene	ND (0.19)	0.02	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Fluorene	ND (0.19)	0.03	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Indeno(1,2,3-cd)Pyrene	ND (0.05)	0.02	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Naphthalene	ND (0.19)	0.04	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Pentachlorophenol	ND (0.84)	0.30	8270D SIM		1	01/19/17 5:10	C7A0164	CA71116
Phenanthrene	ND (0.19)	0.04	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116
Pyrene	ND (0.19)	0.02	8270D SIM		1	01/12/17 23:41	C7A0164	CA71116

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*61 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*75 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*85 %*		*30-130*
Surrogate: Nitrobenzene-d5	*79 %*		*30-130*
Surrogate: p-Terphenyl-d14	*97 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36
Date Sampled: 01/11/17 11:20
Percent Solids: N/A

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-03
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	ND (0.10)		4500 NH3 G		1	JLK	01/16/17 17:20	mg/L	CA71301
Chloride	**100** (10.0)		§		1	SUB	01/13/17 20:19	mg/L	CA71826
Hexavalent Chromium	ND (10)		7196A		1	JLK	01/11/17 21:00	ug/L	CA71144
Phenols	ND (100)	30	420.1		1	JLK	01/13/17 17:00	ug/L	CA71336
Total Cyanide (LL)	ND (5.00)	1.80	4500 CN CE		1	EEM	01/13/17 11:40	ug/L	CA71317
Total Petroleum Hydrocarbon	ND (5)		1664A		1	CRR	01/16/17 14:42	mg/L	CA71306
Total Residual Chlorine	ND (10)		4500-Cl E		1	JLK	01/11/17 20:08	ug/L	CA71143
Total Suspended Solids	**116000** (5000)		2540D		1	JLK	01/12/17 18:08	ug/L	CA71229

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36
Date Sampled: 01/11/17 11:20
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: JXS
Prepared: 1/13/17 12:00

8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,2-Dibromoethane	ND (0.015)	0.005	8011		1	JXS	01/13/17 19:32		CA71322

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*124 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36
Date Sampled: 01/11/17 11:20
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-03
Sample Matrix: Ground Water
Units: mg/L
Analyst: DPS
Prepared: 1/12/17 14:30

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		8015		1	DPS	01/13/17 17:42		CA71246

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36 FF
Date Sampled: 01/11/17 11:50
Percent Solids: N/A

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-04
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: 3005A

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Antimony	ND (5.0)	0.6	7010		1	KJK	01/17/17 22:39	50	25	CA71146
Arsenic	ND (5.0)	0.4	7010		1	KJK	01/14/17 16:17	50	25	CA71146
Barium	**72.0** (25.0)	1.5	6010C		1	KJK	01/13/17 3:51	50	25	CA71146
Beryllium	ND (0.5)	0.1	6010C		1	KJK	01/13/17 3:51	50	25	CA71146
Cadmium	**J 0.03** (0.5)	0.03	7010		1	KJK	01/17/17 16:11	50	25	CA71146
Chromium	ND (10.0)	1.5	6010C		1	KJK	01/13/17 3:51	50	25	CA71146
Chromium III	ND (10)		6010C		1	JLK	01/13/17 3:51	1	1	[CALC]
Copper	ND (5.0)	2.0	6010C		1	KJK	01/13/17 3:51	50	25	CA71146
Iron	**B 89.6** (50.0)	11.5	6010C		1	KJK	01/13/17 3:51	50	25	CA71146
Lead	ND (2.5)	0.5	7010		1	KJK	01/14/17 22:36	50	25	CA71146
Mercury	ND (0.20)	0.12	7470A		1	MJV	01/13/17 12:54	20	40	CA71147
Nickel	ND (10.0)	1.0	6010C		1	KJK	01/13/17 3:51	50	25	CA71146
Selenium	ND (5.0)	0.6	7010		1	KJK	01/15/17 3:53	50	25	CA71146
Silver	ND (0.2)	0.08	7010		1	KJK	01/17/17 19:16	50	25	CA71146
Thallium	ND (1.0)	0.5	7010		1	KJK	01/14/17 18:59	50	25	CA71146
Vanadium	ND (10.0)	1.0	6010C		1	KJK	01/13/17 3:51	50	25	CA71146
Zinc	**B, J 18.9** (25.0)	4.5	6010C		1	KJK	01/13/17 3:51	50	25	CA71146

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36 FF
Date Sampled: 01/11/17 11:50
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-04
Sample Matrix: Ground Water
Units: ug/L
Analyst: SMR
Prepared: 1/13/17 9:30
Cleanup Method: 3665A

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.09)	0.03	8082A		1	01/13/17 14:44		CA71203
Aroclor 1221	ND (0.09)	0.03	8082A		1	01/13/17 14:44		CA71203
Aroclor 1232	ND (0.09)	0.03	8082A		1	01/13/17 14:44		CA71203
Aroclor 1242	ND (0.09)	0.03	8082A		1	01/13/17 14:44		CA71203
Aroclor 1248	ND (0.09)	0.03	8082A		1	01/13/17 14:44		CA71203
Aroclor 1254	ND (0.09)	0.03	8082A		1	01/13/17 14:44		CA71203
Aroclor 1260	ND (0.09)	0.03	8082A		1	01/13/17 14:44		CA71203
Aroclor 1262	ND (0.09)	0.03	8082A		1	01/13/17 14:44		CA71203
Aroclor 1268	ND (0.09)	0.03	8082A		1	01/13/17 14:44		CA71203

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*76 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*81 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*64 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*67 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36 FF
Date Sampled: 01/11/17 11:50
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-04
Sample Matrix: Ground Water
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1-Trichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
1,1,2-Trichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
1,1-Dichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
1,1-Dichloroethene	ND (1.0)	0.3	8260B		1	01/12/17 19:39	C7A0161	CA71231
1,2-Dibromoethane	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
1,2-Dichlorobenzene	ND (1.0)	0.1	8260B		1	01/12/17 19:39	C7A0161	CA71231
1,2-Dichloroethane	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
1,3-Dichlorobenzene	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
1,4-Dichlorobenzene	ND (1.0)	0.1	8260B		1	01/12/17 19:39	C7A0161	CA71231
1,4-Dioxane - Screen	ND (500)	190	8260B		1	01/12/17 19:39	C7A0161	CA71231
Acetone	ND (10.0)	2.7	8260B		1	01/12/17 19:39	C7A0161	CA71231
Benzene	ND (1.0)	0.1	8260B		1	01/12/17 19:39	C7A0161	CA71231
Carbon Tetrachloride	ND (1.0)	0.1	8260B		1	01/12/17 19:39	C7A0161	CA71231
cis-1,2-Dichloroethene	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
Ethylbenzene	ND (1.0)	0.1	8260B		1	01/12/17 19:39	C7A0161	CA71231
Methyl tert-Butyl Ether	ND (1.0)	0.3	8260B		1	01/12/17 19:39	C7A0161	CA71231
Methylene Chloride	ND (2.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
Naphthalene	**B, J 0.2** (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
Tertiary-amyl methyl ether	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
Tertiary-butyl Alcohol	ND (25.0)	10.0	8260B		1	01/12/17 19:39	C7A0161	CA71231
Tetrachloroethene	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
Toluene	**J 0.1** (1.0)	0.1	8260B		1	01/12/17 19:39	C7A0161	CA71231
Trichloroethene	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
Vinyl Chloride	ND (1.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231
Xylene O	ND (1.0)	0.1	8260B		1	01/12/17 19:39	C7A0161	CA71231
Xylene P,M	ND (2.0)	0.2	8260B		1	01/12/17 19:39	C7A0161	CA71231

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*99 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*95 %*		*70-130*
Surrogate: Dibromofluoromethane	*99 %*		*70-130*
Surrogate: Toluene-d8	*101 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36 FF
Date Sampled: 01/11/17 11:50
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 0.25
Extraction Method: 3510C

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-04
Sample Matrix: Ground Water
Units: ug/L
Analyst: VSC
Prepared: 1/12/17 10:15

8270D(SIM) Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Acenaphthene	ND (0.19)	0.04	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Acenaphthylene	ND (0.19)	0.03	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Anthracene	ND (0.19)	0.03	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Benzo(a)anthracene	ND (0.05)	0.01	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Benzo(a)pyrene	ND (0.05)	0.01	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Benzo(b)fluoranthene	ND (0.05)	0.02	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Benzo(g,h,i)perylene	ND (0.19)	0.02	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Benzo(k)fluoranthene	ND (0.05)	0.02	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
bis(2-Ethylhexyl)phthalate	**B, J 2.02** (2.34)	0.19	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Butylbenzylphthalate	**B, J 0.43** (2.34)	0.19	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Chrysene	ND (0.05)	0.01	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Dibenzo(a,h)Anthracene	ND (0.05)	0.02	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Diethylphthalate	**3.85** (2.34)	0.19	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Dimethylphthalate	ND (2.34)	0.19	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Di-n-butylphthalate	**J 0.69** (2.34)	0.19	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Di-n-octylphthalate	ND (2.34)	0.19	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Fluoranthene	ND (0.19)	0.02	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Fluorene	ND (0.19)	0.03	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Indeno(1,2,3-cd)Pyrene	ND (0.05)	0.02	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Naphthalene	ND (0.19)	0.04	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Pentachlorophenol	ND (0.84)	0.30	8270D SIM		1	01/19/17 5:59	C7A0164	CA71116
Phenanthrene	ND (0.19)	0.04	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116
Pyrene	ND (0.19)	0.02	8270D SIM		1	01/13/17 0:31	C7A0164	CA71116

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*65 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*87 %*		*15-110*
Surrogate: 2-Fluorobiphenyl	*83 %*		*30-130*
Surrogate: Nitrobenzene-d5	*80 %*		*30-130*
Surrogate: p-Terphenyl-d14	*92 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36 FF
Date Sampled: 01/11/17 11:50
Percent Solids: N/A

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-04
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	ND (0.10)		4500 NH3 G		1	JLK	01/16/17 17:20	mg/L	CA71301
Chloride	**100** (10.0)		§		1	SUB	01/13/17 20:33	mg/L	CA71826
Hexavalent Chromium	ND (10)		7196A		1	JLK	01/11/17 21:00	ug/L	CA71144
Phenols	ND (100)	30	420.1		1	JLK	01/13/17 17:00	ug/L	CA71336
Total Cyanide (LL)	ND (5.00)	1.80	4500 CN CE		1	EEM	01/13/17 11:40	ug/L	CA71317
Total Petroleum Hydrocarbon	ND (5)		1664A		1	CRR	01/16/17 14:42	mg/L	CA71306
Total Residual Chlorine	ND (10)		4500-Cl E		1	JLK	01/11/17 20:08	ug/L	CA71143
Total Suspended Solids	ND (5000)		2540D		1	JLK	01/12/17 18:08	ug/L	CA71229

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36 FF
Date Sampled: 01/11/17 11:50
Percent Solids: N/A
Initial Volume: 35
Final Volume: 2
Extraction Method: 504/8011

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-04
Sample Matrix: Ground Water
Units: ug/L
Analyst: JXS
Prepared: 1/13/17 12:00

8011 1,2-Dibromoethane / 1,2-Dibromo-3-chloropropane

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,2-Dibromoethane	ND (0.015)	0.005	8011		1	JXS	01/13/17 20:00		CA71322

	%Recovery	Qualifier	Limits
Surrogate: Pentachloroethane	*107 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP
Client Sample ID: MW-36 FF
Date Sampled: 01/11/17 11:50
Percent Solids: N/A
Initial Volume: 1
Final Volume: 1
Extraction Method: No Prep

ESS Laboratory Work Order: 1701214
ESS Laboratory Sample ID: 1701214-04
Sample Matrix: Ground Water
Units: mg/L
Analyst: DPS
Prepared: 1/12/17 14:30

Alcohol Scan by GC/FID

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Ethanol	ND (10)		8015		1	DPS	01/13/17 18:04		CA71246

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP/MCP

ESS Laboratory Work Order: 1701214

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

R.I. ANALYTICAL
Specialists in Environmental Services

LABORATORY REPORT

ESS Laboratory
Attn: Mr. Shawn Morrell
185 Frances Avenue
Cranston, RI 02910-2211

Date Received: 1/12/2017
Date Reported: 1/17/2017
P.O. Number B02406

Work Order #: 1701-00787

Project Name: PROJECT: 1701214

Enclosed are the analytical results and Chain of Custody for your project referenced above. The sample(s) were analyzed by our Warwick, RI laboratory unless noted otherwise. When applicable, indication of sample analysis at our Hudson, MA laboratory and/or subcontracted results are noted and subcontracted reports are enclosed in their entirety.

All samples were analyzed within the established guidelines of US EPA approved methods with all requirements met, unless otherwise noted at the end of a given sample's analytical results or in a case narrative.

The Detection Limit is defined as the lowest level that can be reliably achieved during routine laboratory conditions.

These results only pertain to the samples submitted for this Work Order # and this report shall not be reproduced except in its entirety.

We certify that the following results are true and accurate to the best of our knowledge. If you have questions or need further assistance, please contact our Customer Service Department.

Approved by:

Yihai Ding
Technical Director

R.I. Analytical Laboratories, Inc.

Laboratory Report

ESS Laboratory
Work Order #: 1701-00787
Project Name: PROJECT: 1701214

Sample Number: 001
Sample Description: 1701214-01
Sample Type : GRAB
Sample Date / Time : 1/11/2017 @ 10:20

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Chloride	200	10	mg/l	EPA 300.0	1/13/2017 19:51	AEG

Sample Number: 002
Sample Description: 1701214-02
Sample Type : GRAB
Sample Date / Time : 1/11/2017 @ 10:50

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Chloride	240	10	mg/l	EPA 300.0	1/13/2017 20:05	AEG

Sample Number: 003
Sample Description: 1701214-03
Sample Type : GRAB
Sample Date / Time : 1/11/2017 @ 11:20

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Chloride	100	10	mg/l	EPA 300.0	1/13/2017 20:19	AEG

Sample Number: 004
Sample Description: 1701214-04
Sample Type : GRAB
Sample Date / Time : 1/11/2017 @ 11:50

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Chloride	100	10	mg/l	EPA 300.0	1/13/2017 20:33	AEG

R.I. Analytical Laboratories, Inc.

Laboratory Report

ESS Laboratory
Work Order #: 1701-00787
Project Name: PROJECT: 1701214

Sample Number: 005
Sample Description: 1701214-05
Sample Type : GRAB
Sample Date / Time : 1/11/2017 @ 08:30

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE/TIME ANALYZED	ANALYST
Chloride	70	10	mg/l	EPA 300.0	1/13/2017 20:47	AEG

ESS Laboratory
1701-00787
1/17/17

-Method Blanks Results-

Parameter	Units	Results	Date Analyzed
Chloride	mg/l	<1.0	1/13/2017

-LCS/LCS Duplicate Data Results-

Parameter	Spike Conc	LCS Conc	LCS % Rec	LCS Dup Conc	LCS DUP % Rec	% RPD	Date Analyzed
Chloride	10.0	9.37	94				1/13/2017

ESS Laboratory — RIAL

Division of Thielsch Engineering, Inc.

185 Frances Avenue,Cranston RI 02910-2211
Tel. (401)461-7181 Fax (401)461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 1701214

Turn Time **DUE 1/18/17**

Regulatory State: **MA** RI CT NH NJ NY ME Other_____

Is this project for any of the following:(please circle)
MA-MCP Navy USACE CT DEP Other **RGP**

Reporting Limits - **EPA RGP Appendix VII**

Electonic Deliverables **Excel*** Access PDF *

Co. Name: **ESS Laboratory**	Project #:	Project Name: **1701214**	
Contact Person: **Shawn Morrell**	Proj. Location:		
Address:	City , State:	Zip:	PO #: B02406
Tel. ext 3083	email: smorrell@thielsch.com		

ESS Lab ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample ID	Pres Code	# of Containers	Type of Container	Vol of Container	Analysis: Chloride 300.0
	1/11/17	1020		GW	1701214-01	1	1	P		X
	1/11/17	1050		GW	1701214-02	1	1	P		X
	1/11/17	1120		GW	1701214-03	1	1	P		X
	1/11/17	1150		GW	1701214-04	1	1	P		X
	1/11/17	0830		GW	1701214-05	1	1	P		X

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present ___V___Yes _____No

Seals Intact ____ Yes _____No NA:____

Cooler Temperature: 3.5°C

Internal Use Only
[ ] Pickup
[ ] Technician____

Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_Na2S2O3__

Sampled by :

Comments: ***Provide ESS Deliverables**

Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)	Relinquished by: (Signature, Date & Time)	Received by: (Signature, Date & Time)
1/18/17 9:07	Dave 1/18/17 9:07		

* By circling MA-MCP, client acknowledges sampels were collected in accordance with MADEP CAM VIIA

Please fax to the laboratory all changes to Chain of Custody

Report Method Blank & Laboratory Control Sample Results

1701-00787

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Tighe & Bond - KPB/TB/MM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 1701214
Date Received: 1/11/2017
Project Due Date: 1/18/2017
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 5.8 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** (Yes) / No / NA
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? (Yes) / No
    ESS Sample IDs: 1-5
    Analysis: Chloride
    TAT: 5 day
12. Were VOAs received? (Yes) / No
    a. Air bubbles in aqueous VOAs? Yes / (No)
    b. Does methanol cover soil completely? Yes / No / (NA)
13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
    b. Low Level VOA vials frozen: Date: _____ Time: _____ By: _____

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / No
    Who was contacted? _____ Date: _____ Time: _____ By: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	98457	Yes	No	Yes	VOA Vial - HCl	HCl	
01	98458	Yes	No	Yes	VOA Vial - HCl	HCl	
01	98459	Yes	No	Yes	VOA Vial - HCl	HCl	
01	98472	Yes	No	Yes	VOA Vial - Unpres	NP	
01	98473	Yes	No	Yes	VOA Vial - Unpres	NP	
01	98474	Yes	No	Yes	VOA Vial - Unpres	NP	
01	98484	Yes	NA	Yes	1L Amber - Unpres	NP	
01	98485	Yes	NA	Yes	1L Amber - Unpres	NP	
01	98494	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
01	98495	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
01	98500	Yes	NA	Yes	1L Poly - Unpres	NP	
01	98505	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
01	98510	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
01	98515	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH >12 eL 1/11/17 1812
01	98520	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	98525	Yes	NA	Yes	250 mL Poly - Unpres	NP	
02	98454	Yes	No	Yes	VOA Vial - HCl	HCl	
02	98455	Yes	No	Yes	VOA Vial - HCl	HCl	
02	98456	Yes	No	Yes	VOA Vial - HCl	HCl	
02	98469	Yes	No	Yes	VOA Vial - Unpres	NP	
02	98470	Yes	No	Yes	VOA Vial - Unpres	NP	
02	98471	Yes	No	Yes	VOA Vial - Unpres	NP	
02	98482	Yes	NA	Yes	1L Amber - Unpres	NP	
02	98483	Yes	NA	Yes	1L Amber - Unpres	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Tighe & Bond - KPB/TB/MM

ESS Project ID: 1701214

Date Received: 1/11/2017

02	98492	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
02	98493	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
02	98499	Yes	NA	Yes	1L Poly - Unpres	NP	
02	98504	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
02	98509	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	98514	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH >12 AL 1/11/17 1812
02	98519	Yes	NA	Yes	250 mL Poly - Unpres	NP	
02	98524	Yes	NA	Yes	250 mL Poly - Unpres	NP	
03	98451	Yes	No	Yes	VOA Vial - HCl	HCl	
03	98452	Yes	No	Yes	VOA Vial - HCl	HCl	
03	98453	Yes	No	Yes	VOA Vial - HCl	HCl	
03	98466	Yes	No	Yes	VOA Vial - Unpres	NP	
03	98467	Yes	No	Yes	VOA Vial - Unpres	NP	
03	98468	Yes	No	Yes	VOA Vial - Unpres	NP	
03	98480	Yes	NA	Yes	1L Amber - Unpres	NP	
03	98481	Yes	NA	Yes	1L Amber - Unpres	NP	
03	98490	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
03	98491	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
03	98498	Yes	NA	Yes	1L Poly - Unpres	NP	
03	98503	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
03	98508	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
03	98513	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH >12 AL 1/11/17 1812
03	98518	Yes	NA	Yes	250 mL Poly - Unpres	NP	
03	98523	Yes	NA	Yes	250 mL Poly - Unpres	NP	
04	98448	Yes	No	Yes	VOA Vial - HCl	HCl	
04	98449	Yes	No	Yes	VOA Vial - HCl	HCl	
04	98450	Yes	No	Yes	VOA Vial - HCl	HCl	
04	98463	Yes	No	Yes	VOA Vial - Unpres	NP	
04	98464	Yes	No	Yes	VOA Vial - Unpres	NP	
04	98465	Yes	No	Yes	VOA Vial - Unpres	NP	
04	98478	Yes	NA	Yes	1L Amber - Unpres	NP	
04	98479	Yes	NA	Yes	1L Amber - Unpres	NP	
04	98488	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
04	98489	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
04	98497	Yes	NA	Yes	1L Poly - Unpres	NP	
04	98502	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
04	98507	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
04	98512	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH >12 AL 1/11/17 1812
04	98517	Yes	NA	Yes	250 mL Poly - Unpres	NP	
04	98522	Yes	NA	Yes	250 mL Poly - Unpres	NP	
05	98445	Yes	No	Yes	VOA Vial - HCl	HCl	
05	98446	Yes	No	Yes	VOA Vial - HCl	HCl	
05	98447	Yes	No	Yes	VOA Vial - HCl	HCl	
05	98460	Yes	No	Yes	VOA Vial - Unpres	NP	
05	98461	Yes	No	Yes	VOA Vial - Unpres	NP	
05	98462	Yes	No	Yes	VOA Vial - Unpres	NP	
05	98476	Yes	NA	Yes	1L Amber - Unpres	NP	
05	98477	Yes	NA	Yes	1L Amber - Unpres	NP	
05	98486	Yes	NA	Yes	1L Amber - H2SO4	H2SO4	
05	98496	Yes	NA	Yes	1L Poly - Unpres	NP	
05	98501	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
05	98506	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
05	98511	Yes	NA	Yes	250 mL Poly - NaOH	NaOH	pH >12 1/11/17 1812
05	98516	Yes	NA	Yes	250 mL Poly - Unpres	NP	
05	98521	Yes	NA	Yes	250 mL Poly - Unpres	NP	
06	98475	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	

2nd Review

Are barcode labels on correct containers? (Yes) / No

Completed By: _____ Date & Time: 1/11/17 1812

Reviewed By: _____ Date & Time: 1/11/17 1850

Delivered By: _____ 1/11/17 1850

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 1701214

Turn Time: 5 day Rush:
Regulatory State:
Is this project for any of the following?:
☐ MA-MCP ☐ CT-RCP ☒ RGP ☐ Remediation

Reporting Limits: EPA RGP Eff limits (Appendix VII)
Electonic Deliverables: ☒ Limit Checker ☐ Excel ☐ Other (Please Specifiy) → Eversource EDD

Company Name	Project #	Project Name
Tighe + Bond	N: 0998-11-13	Woburn to Mystic
Contact Person	**Address**	
Dean Bebis	One Univ. Ave	
City	**State**	**Zip Code** / **PO #**
Westwood	MA	02090
Telephone Number	**FAX Number**	**Email Address**
		DBebis@TighеBond.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	TSS	TRC	Ammonia	Chloride	Cyanide	Hex. Chrom	VOCs (methyl chloroform, As, Cd, Chrom III, Cr, Fe, Pb, Hg, Ni, Se, Ag, Zn)	SVOCs	TPH	MTBE, TAM	TAMS	Ethanol	PCB, T. Phenols	EDB Cr+6
1	1/11/17	1020	G	GW	MW-37	X	→										→	X	X
2		1050			MW-37FF	X	→										→	X	X
3		1120			MW-36	X	→										→	X	X
4		1150			MW-36FF	X	→										→	X	X
		~~1200~~			~~MW-505BL~~	~~X~~	→										→		
5		830			MW-505BFF	X	→										→	X	X
6		800	G	GW	MW-505B							X							

Container Type: AG-Amber Glass B-BOD Bottle G-Glass P-Poly S-Sterile V-Vial O-Other — ag ag
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*
Number of Containers: 7 5

Laboratory Use Only
Cooler Present: yes
Seals Intact:
Cooler Temperature: 5.8 °C

Sampled by: KM

Comments: **Please specify "Other" preservative and containers types in this space**

analysis added per MEM 1/12/17 mkm - not enough volume for T. Phenols on MW-505B FF

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
1/11/17 1242	1/11/17 1500	1/11/17 1700	1/11/17 1722
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 1701214

Turn Time: 5 day Rush:
Regulatory State:
Is this project for any of the following?:
☐ MA-MCP ☐ CT-RCP ☒ RGP ☐ Remediation

Reporting Limits: EPA RGP Eff limits (Appendix VII)
Electonic Deliverables: ☒ Limit Checker ☐ Excel ☐ Other (Please Specifiy) → Eversource EDD

Company Name	Project #	Project Name
Tighe + Bond	N: 0998-11-13	Woburn to Mystic
Contact Person	**Address**	
Dean Bebis	One Univ. Ave	
City	**State**	**Zip Code** / **PO #**
Westwood	MA	02090
Telephone Number	**FAX Number**	**Email Address**
		DBebis@TigheBond.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	TSS	TRC	Ammonia	Chloride	Cyanide	Hex. Chrom	Total Metals (Antimony, As, Cd, Chrom III, Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn)	VOCs	SVOCs	TPH	MTBE, TAM	TAMS	Ethanol			
1	1/11/17	1020	G	GW	MW-37	X															
2		1050			MW-37FF	X															
3		1120			MW-36	X															
4		1150			MW-36FF	X															
		~~Bob~~			~~MW-505B~~	~~X~~															
5		830			MW-505BFF	X															
6		800	G	GW	MW-505B							X									

Container Type: AG-Amber Glass B-BOD Bottle G-Glass P-Poly S-Sterile V-Vial O-Other — ag ag
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*
Number of Containers: 7 5

Laboratory Use Only
Cooler Present: yes
Seals Intact:
Cooler Temperature: 5.8 °C

Sampled by: KH
Comments: Please specify "Other" preservative and containers types in this space

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
1/11/17 1242	1/11/17 1500	1/11/17 1700	1/11/17 1722
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

CERTIFICATE OF ANALYSIS

Michael Martin
Tighe & Bond
4 Barlows Landing Road, Unit 15
Pocasset, MA 02559

RE: Woburn to Mystic - RGP (N-998-11)
ESS Laboratory Work Order Number: 1711482

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 2:25 pm, Nov 20, 2017

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP

ESS Laboratory Work Order: 1711482

SAMPLE RECEIPT

The following samples were received on November 15, 2017 for the analyses specified on the enclosed Chain of Custody Record.

The samples and analyses listed below were analyzed in accordance with the 2017 Remediation General Permit under the National Pollutant Discharge Elimination System (NPDES).

ESS Laboratory is unable to achieve the required detection limit of 0.4 mg/L for Ethanol for the RGP permit. We have also been unable to procure a subcontract laboatory that is able to achieve this limit. The data for Ethanol has been reported using our current method reporting limit.

Lab Number	Sample Name	Matrix	Analysis
1711482-01	Mystic at Winter	Surface Water	200.7, 3113B, 350.1, 3500Cr B-2009, 9040
1711482-02	Mystic	Surface Water	200.7, 3113B, 350.1, 3500Cr B-2009, 9040
1711482-03	Mystic Crossing	Surface Water	200.7, 3113B, 350.1, 3500Cr B-2009, 9040
1711482-04	Aberjona	Surface Water	200.7, 3113B, 350.1, 3500Cr B-2009, 9040
1711482-05	Winter Pond	Surface Water	200.7, 3113B, 350.1, 3500Cr B-2009, 9040
1711482-06	Mystic at Boston Inner	Surface Water	200.7, 2520B, 3113B, 350.1, 3500Cr B-2009, 9040
1711482-07	Mystic at Laydown	Surface Water	200.7, 3113B, 350.1, 3500Cr B-2009, 9040

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP

ESS Laboratory Work Order: 1711482

PROJECT NARRATIVE

Total Metals

1711482-06	**Elevated Method Reporting Limits due to sample matrix (EL).**
	Cadmium , Copper , Nickel
1711482-07	**Elevated Method Reporting Limits due to sample matrix (EL).**
	Cadmium , Copper , Nickel

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP

ESS Laboratory Work Order: 1711482

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP
Client Sample ID: Aberjona
Date Sampled: 11/15/17 09:00
Percent Solids: N/A

ESS Laboratory Work Order: 1711482
ESS Laboratory Sample ID: 1711482-04
Sample Matrix: Surface Water
Units: ug/L

Extraction Method: 3005A/200.7

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**4.7** (2.5)		3113B		5	KJK	11/19/17 2:18	100	10	CK71531
Cadmium	ND (2.00)		200.7		2	KJK	11/16/17 16:21	100	10	CK71531
Chromium	ND (4.0)		200.7		2	KJK	11/16/17 16:21	100	10	CK71531
Chromium III	ND (10.0)		200.7		2	JLK	11/16/17 16:21	1	1	[CALC]
Copper	**3.1** (2.0)		200.7		2	KJK	11/16/17 16:21	100	10	CK71531
Hardness	**145000** (824)		200.7		10	KJK	11/16/17 15:16	1	1	[CALC]
Iron	**596** (100)		200.7		10	KJK	11/16/17 15:16	100	10	CK71531
Lead	ND (4.0)		200.7		2	KJK	11/16/17 16:21	100	10	CK71531
Nickel	ND (4.0)		200.7		2	KJK	11/16/17 16:21	100	10	CK71531
Silver	ND (1.0)		200.7		2	KJK	11/16/17 16:21	100	10	CK71531
Zinc	**44.8** (10.0)		200.7		2	KJK	11/16/17 16:21	100	10	CK71531

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP
Client Sample ID: Aberjona
Date Sampled: 11/15/17 09:00
Percent Solids: N/A

ESS Laboratory Work Order: 1711482
ESS Laboratory Sample ID: 1711482-04
Sample Matrix: Surface Water

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Ammonia as N	**1.01** (0.10)		350.1		1	EEM	11/17/17 14:49	mg/L	CK71613
Hexavalent Chromium	ND (10.0)		3500Cr B-2009		1	JLK	11/15/17 20:47	ug/L	CK71546
pH	**7.03** (N/A)		9040		1	BCA	11/15/17 21:40	S.U.	CK71549
pH Sample Temp	**Aqueous pH measured in water at 17.1 ºC.** (N/A)								

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP

ESS Laboratory Work Order: 1711482

Quality Control Data

Total Metals

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch CK71531 - 3005A/200.7										
Blank										
Arsenic	ND	0.5	ug/L							
Cadmium	ND	1.00	ug/L							
Chromium	ND	2.0	ug/L							
Chromium III	ND	2.00	ug/L							
Copper	ND	1.0	ug/L							
Hardness	ND	82.4	ug/L							
Iron	ND	10.0	ug/L							
Lead	ND	0.2	ug/L							
Lead	ND	2.0	ug/L							
Nickel	ND	2.0	ug/L							
Silver	ND	0.5	ug/L							
Zinc	ND	5.0	ug/L							
LCS										
Arsenic	44.8	12.5	ug/L	50.00		90	85-115			
Cadmium	23.6	1.00	ug/L	25.00		94	85-115			
Chromium	48.9	2.0	ug/L	50.00		98	85-115			
Chromium III	48.9	2.00	ug/L							
Copper	52.4	1.0	ug/L	50.00		105	85-115			
Hardness	3260	82.4	ug/L							
Iron	239	10.0	ug/L	250.0		96	85-115			
Lead	45.3	5.0	ug/L	50.00		91	85-115			
Lead	49.7	2.0	ug/L	50.00		99	85-115			
Nickel	48.8	2.0	ug/L	50.00		98	85-115			
Silver	26.1	0.5	ug/L	25.00		104	85-115			
Zinc	51.7	5.0	ug/L	50.00		103	85-115			
LCS Dup										
Arsenic	48.5	12.5	ug/L	50.00		97	85-115	8	20	
Cadmium	23.4	1.00	ug/L	25.00		94	85-115	0.7	20	
Chromium	48.7	2.0	ug/L	50.00		97	85-115	0.4	20	
Chromium III	48.7	2.00	ug/L							
Copper	52.0	1.0	ug/L	50.00		104	85-115	0.8	20	
Hardness	3210	82.4	ug/L							
Iron	237	10.0	ug/L	250.0		95	85-115	0.8	20	
Lead	47.5	5.0	ug/L	50.00		95	85-115	5	20	
Lead	49.8	2.0	ug/L	50.00		100	85-115	0.02	20	
Nickel	48.2	2.0	ug/L	50.00		96	85-115	1	20	
Silver	26.0	0.5	ug/L	25.00		104	85-115	0.2	20	
Zinc	53.8	5.0	ug/L	50.00		108	85-115	4	20	
Batch CK71546 - [CALC]										
Blank										
Chromium III	ND	10.0	ug/L							
LCS										
Chromium III	ND		ug/L							

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP

ESS Laboratory Work Order: 1711482

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CK71546 - [CALC]										
LCS Dup										
Chromium III	ND		ug/L							
Classical Chemistry										
Batch CK71546 - General Preparation										
Blank										
Hexavalent Chromium	ND	10.0	ug/L							
LCS										
Hexavalent Chromium	0.503		mg/L	0.4998		101	90-110			
LCS Dup										
Hexavalent Chromium	0.516		mg/L	0.4998		103	90-110	3	20	
Batch CK71613 - NH4 Prep										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.08	0.10	mg/L	0.09994		81	80-120			
LCS										
Ammonia as N	1.02	0.10	mg/L	0.9994		102	80-120			
Batch CK71644 - General Preparation										
LCS										
Salinity	1.0		ppt	1.000		96	85-115			

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP

ESS Laboratory Work Order: 1711482

Notes and Definitions

Z16d	Aqueous pH measured in water at 17.7 ºC.
Z16c	Aqueous pH measured in water at 17.6 ºC.
Z16b	Aqueous pH measured in water at 17.4 ºC.
Z16a	Aqueous pH measured in water at 17.2 ºC.
Z16	Aqueous pH measured in water at 17.1 ºC.
U	Analyte included in the analysis, but not detected
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic - RGP

ESS Laboratory Work Order: 1711482

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Tighe & Bond - KPB/TB/MM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 1711482
Date Received: 11/15/2017
Project Due Date: 11/17/2017
Days for Project: 2 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 0.4 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** (Yes) / No / NA
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? Yes / (No)
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / No
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	182550	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
01	182557	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
01	182570	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	182571	Yes	NA	Yes	250 mL Poly - Unpres	NP	
01	182578	Yes	NA	Yes	250 mL Amber - Unpres	NP	
02	182549	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
02	182556	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	182568	Yes	NA	Yes	250 mL Poly - Unpres	NP	
02	182569	Yes	NA	Yes	250 mL Poly - Unpres	NP	
02	182577	Yes	NA	Yes	250 mL Amber - Unpres	NP	
03	182548	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
03	182555	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
03	182566	Yes	NA	Yes	250 mL Poly - Unpres	NP	
03	182567	Yes	NA	Yes	250 mL Poly - Unpres	NP	
03	182576	Yes	NA	Yes	250 mL Amber - Unpres	NP	
04	182547	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
04	182554	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
04	182564	Yes	NA	Yes	250 mL Poly - Unpres	NP	
04	182565	Yes	NA	Yes	250 mL Poly - Unpres	NP	
04	182575	Yes	NA	Yes	250 mL Amber - Unpres	NP	
05	182546	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4	
05	182553	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
05	182562	Yes	NA	Yes	250 mL Poly - Unpres	NP	
05	182563	Yes	NA	Yes	250 mL Poly - Unpres	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Tighe & Bond - KPB/TB/MM

ESS Project ID: 1711482

Date Received: 11/15/2017

05	182574	Yes	NA	Yes	250 mL Amber - Unpres	NP
06	182545	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4
06	182552	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
06	182560	Yes	NA	Yes	250 mL Poly - Unpres	NP
06	182561	Yes	NA	Yes	250 mL Poly - Unpres	NP
06	182573	Yes	NA	Yes	250 mL Amber - Unpres	NP
07	182544	Yes	NA	Yes	500 mL Poly - H2SO4	H2SO4
07	182551	Yes	NA	Yes	250 mL Poly - HNO3	HNO3
07	182558	Yes	NA	Yes	250 mL Poly - Unpres	NP
07	182559	Yes	NA	Yes	250 mL Poly - Unpres	NP
07	182572	Yes	NA	Yes	250 mL Amber - Unpres	NP

2nd Review
Are barcode labels on correct containers? (Yes) / No

Completed By: _____ Date & Time: 11/15/17 1907

Reviewed By: _____ Date & Time: 11/15/17 2029

Delivered By: _____ 11/15/17 2029

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # D11482

Turn Time 5-Day **Rush** 2-Day

Regulatory State Massachusetts

Is this project for any of the following?: ○CT RCP ○MA MCP ◉RGP

Reporting Limits GW-1

Electonic Deliverables ☑Limit Checker ☑Standard Excel ☑Other (Please Specify →) pdf

Company Name	Project #	Project Name
Tighe & Bond	N-998-11	Mystic to Woburn

Contact Person	Address
Dean Bebis	1 University Ave

City	State	Zip Code	PO #
Westwood	MA	02090	

Telephone Number	FAX Number	Email Address
(508) 654-0492		dsbebis@tighebond.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	pH	Hardness	Cr+6	NH4	Salinity	Arsenic	Cadmium	Chromium III	Copper	Iron	Lead	Nickel	Silver	Zinc		
01	11-15-17	10:00	Grab	Surface Water	Mystic at Winter	X	X	X	X		X	X	X	X	X	X	X		X		
02	11-15-17	10:30	Grab	Surface Water	Mystic	X	X	X	X		X	X	X	X	X	X	X		X		
03	11-15-17	9:30	Grab	Surface Water	Mystic Crossing	X	X	X	X		X	X	X	X	X	X	X		X		
04	11-15-17	9:00	Grab	Surface Water	Aberjona	X	X	X	X		X	X	X	X	X	X	X	X	X		
05	11-15-17	8:30	Grab	Surface Water	Winter Pond	X	X	X	X		X	X	X	X	X	X	X	X	X		
06	11-15-17	11:30	Grab	Surface Water	Mystic at Boston Inner	X		X	X	X	X	X	X	X	X	X	X		X		
07	11-15-17	11:00	Grab	Surface Water	Mystic at Laydown	X	X	X	X		X	X	X	X	X	X	X		X		

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer G - Glass O-Other P-Poly S-Sterile V-Vial

Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*

Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*

Number of Containers per Sample:

Laboratory Use Only

Cooler Present: ✓

Seals Intact:

Cooler Temperature: 0.4 °C

Sampled by : Colleen Brothers

Comments: Please specify "Other" preservative and containers types in this space

Eversource Pricing

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
Colleen Brothers 11-15-17 14:00	11/15/17 16:50	11/15/17 17:00	11/15/17 1855
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

CERTIFICATE OF ANALYSIS

Michael Martin
Tighe & Bond
4 Barlows Landing Road, Unit 15
Pocasset, MA 02559

RE: Woburn to Mystic (N-0998-11-13)
ESS Laboratory Work Order Number: 1711673

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 2:35 pm, Nov 28, 2017

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic

ESS Laboratory Work Order: 1711673

SAMPLE RECEIPT

The following samples were received on November 22, 2017 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Lab Number	Sample Name	Matrix	Analysis
1711673-01	MW-36	Ground Water	6010C
1711673-02	MW-102	Ground Water	6010C

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic

ESS Laboratory Work Order: 1711673

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic

ESS Laboratory Work Order: 1711673

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic
Client Sample ID: MW-36
Date Sampled: 11/22/17 06:00
Percent Solids: N/A

ESS Laboratory Work Order: 1711673
ESS Laboratory Sample ID: 1711673-01
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: [CALC]

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Hardness	**142000** (412)		6010C		1	KJK	11/22/17 23:13	1	1	[CALC]

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic
Client Sample ID: MW-102
Date Sampled: 11/22/17 06:30
Percent Solids: N/A

ESS Laboratory Work Order: 1711673
ESS Laboratory Sample ID: 1711673-02
Sample Matrix: Ground Water
Units: ug/L

Extraction Method: [CALC]

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Hardness	**426000** (412)		6010C		1	KJK	11/22/17 23:47	1	1	[CALC]

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic

ESS Laboratory Work Order: 1711673

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CK72229 - 3005A/200.7										
Blank										
Calcium	ND	0.100	mg/L							
Hardness	ND	412	ug/L							
Magnesium	ND	0.100	mg/L							
LCS										
Calcium	2.38	0.100	mg/L	2.500		95	80-120			
Hardness	15400	412	ug/L							
Magnesium	2.30	0.100	mg/L	2.500		92	80-120			
LCS Dup										
Calcium	2.40	0.100	mg/L	2.500		96	80-120	0.6	20	
Hardness	15600	412	ug/L							
Magnesium	2.33	0.100	mg/L	2.500		93	80-120	1	20	

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic

ESS Laboratory Work Order: 1711673

Notes and Definitions

U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit

CERTIFICATE OF ANALYSIS

Client Name: Tighe & Bond
Client Project ID: Woburn to Mystic

ESS Laboratory Work Order: 1711673

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Tighe & Bond - KPB/TB/MM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 1711673
Date Received: 11/22/2017
Project Due Date: 11/28/2017
Days for Project: 2 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 2.3 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** (Yes) / No / NA
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? Yes / (No)
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / ~~No~~
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	185126	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	
02	185125	Yes	NA	Yes	250 mL Poly - HNO3	HNO3	

2nd Review
Are barcode labels on correct containers? (Yes) / No

Completed By: Date & Time: 11/22/17 1845
Reviewed By: Date & Time: 11/22/17 1944
Delivered By: 11/22/17 1944

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 171673

Turn Time	2 Day	Rush	Yes
Regulatory State	Massachusetts		

Reporting Limits: GW-1

Is this project for any of the following?: ○CT RCP ◉MA MCP ○RGP

Electonic Deliverables: ☑Limit Checker ☑Standard Excel ☑Other (Please Specify →) Eversource EDD

Company Name	Project #	Project Name
Tighe and Bond	N-0998-11-13	Woburn to Mystic

Contact Person	Address
Dean Bebis	1 Univerity Ave

City	State	Zip Code	PO #
Westwood	MA	02090	

Telephone Number	FAX Number	Email Address
		dsbebis@tighebond.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Analysis: Hardness
01	11/22/17	600	G	Groundwater	MW-36	x
02	11/22/17	630	G	Groundwater	MW-102	x

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer G - Glass O-Other P-Poly S-Sterile V-Vial — p

Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other* — 3

Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other* — 4

Number of Containers per Sample: 1

Laboratory Use Only

Cooler Present: yes
Seals Intact: n/a
Cooler Temperature: °C ice temp: 2.3

Sampled by : DSB

Comments: Please specify "Other" preservative and containers types in this space

Eversource Pricing

Pricing provided in Quote provide by Tim Byrnes

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
	11/22/17 16:20	11/22/17 18:24	11/22/17 1834
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

Tighe&Bond

APPENDIX G

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
BOSTON, MA 02109-3912

VIA EMAIL

December 20, 2017

Michael Zylich
Eversource Energy
247 Station Drive, SE270
Westwood, MA 02090
michael.zylich@eversource.com

Re: Authorization to discharge under the Remediation General Permit (RGP) – Authorization #MAG910760, for the Eversource Electrical Transmission Line Project site located in Winchester, MA

Dear Mr. Zylich:

Based on the review of a Notice of Intent (NOI) dated November 29, 2017 submitted by Tighe & Bond, Inc. for the site referenced above, the U.S. Environmental Protection Agency, Region 1 (EPA) hereby authorizes NSTAR Electric Company d/b/a Eversource Energy, as the named owner, and as a named operator and co-permittee with Bond Brothers, to discharge from this site in accordance with the provisions of the RGP. Since this site has discharges to different receiving waters, separate authorizations have been issued. Discharges via the City of Winchester storm sewer system[1] to Aberjona River (MA71-01) are authorized by the number listed above. Discharges from this site to Mystic River (MA71-02) are subject to authorization #MAG910761. The effective date of coverage is the date of this authorization letter.

Enclosed with this RGP authorization to discharge is a summary of the applicable parameters and effluent limitations for your activity category III, contaminated site dewatering discharge. A dilution factor of 2.92, approved by the Massachusetts Department of Environmental Protection, was used in calculating effluent limits applicable to the proposed discharge from this site. Please note that this summary does not represent the complete requirements of the RGP. Operators must comply with all of the applicable requirements of the RGP, including influent and effluent monitoring, record keeping, and reporting requirements. For the complete general permit, see EPA's RGP website.[2] EPA notes that this site is authorized to use two discharge locations associated with the City of Winchester storm sewer system. To meet the requirements of the RGP, the effluent monitoring location must be consistent with the discharge point from the mobile treatment system, prior to co-mingling with any other waste streams.

[1] The operator is responsible for obtaining permission to discharge to this system, prior to initiating discharges. EPA's authorization to discharge does not convey any such permission.
[2] https://www.epa.gov/npdes-permits/remediation-general-permit-rgp-massachusetts-new-hampshire.

This EPA general permit and authorization to discharge will expire on **April 8, 2022**, or upon Notice of Termination (NOT), whichever occurs first. However, in accordance with Part 5.3 of the general permit, your permit coverage will be administratively continued until issuance of a new RGP. Please note that you must submit a NOT within thirty (30) days of the termination of the discharge. You have reported your discharges are expected to terminate December 2019. Because your discharge is expected to last twelve (12) months or more, you are subject to discharge monitoring requirements that begin **January 1, 2019**. See Part 4.6 and 5.2 of the RGP, and Appendix IV, Part 3 for more information regarding reporting requirements.

Please ensure that sufficiently sensitive test methods are used for all sample analyses conducted for this permit. To be considered sufficiently sensitive, test methods must achieve MLs for analysis for a given parameter that is no greater than the effluent limitation for that parameter, unless otherwise specified in the RGP for that parameter. Where no effluent limitation applies, EPA has provided the ML required with the enclosed summary. Where a compliance level applies, EPA has specified the compliance level and provided the ML required with the enclosed summary.

Thank you in advance for your cooperation in this matter. Please contact Shauna Little at (617) 918-1989 or little.shauna@epa.gov, if you have any questions.

Sincerely,

Thelma Murphy

Thelma Murphy, Chief
Storm Water and Construction Permits Section

Enclosure

cc: Rick McKanas, Bond Brothers, via email
Gary W.T. Hedman, LSP, Tighe & Bond, Inc., via email
Michael E. Martin, Tighe & Bond, Inc., via email
Cathy Vakalopoulos, MassDEP, via email
City of Winchester, Department of Public Works, via email

Table 1: Authorization Information

Permit Number	MAG910760
Receiving Water	Aberjona River
Outfall Number	Outfall 001 to City of Winchester
Monitoring Frequency	See Part 4.1.2 of the RGP
Reporting Requirement	See Part 4.6.1 of the RGP; NetDMR requirements begin Jan 1, 2019

Table 2: Chemical-Specific Effluent Limitations and Monitor-Only Requirements[1]

Parameter	Effluent Limitation
A. Inorganics	
Ammonia[2]	Report mg/L
Chloride[3]	Report µg/L
Total Suspended Solids	30 mg/L
Antimony[4]	206 µg/L
Arsenic[4]	104 µg/L
Cadmium[4]	10.2 µg/L
Chromium III[4]	323 µg/L
Chromium VI[4]	323 µg/L
Copper[4]	242 µg/L
Iron[4]	1,000 µg/L
Lead[4]	160 µg/L
Mercury[4]	0.739 µg/L
Nickel[4]	1,450 µg/L
Selenium[4]	235.8 µg/L
Silver[4]	35.1 µg/L
Zinc[4]	420 µg/L
B. Non-Halogenated Volatile Organic Compounds	
Total BTEX	100 µg/L
Benzene	5.0 µg/L
C. Halogenated Volatile Organic Compounds	
Methylene Chloride	4.6 µg/L
D. Non-Halogenated Semi-Volatile Organic Compounds	
Total Phthalates	190 µg/L
Diethylhexyl Phthalate	101 µg/L
Total Group I Polycyclic Aromatic Hydrocarbons[5]	1.0 µg/L
Benzo(a)anthracene[5]	0.0073 µg/L
Benzo(a)pyrene[5]	0.0073 µg/L
Benzo(b)fluoranthene[5]	0.0073 µg/L
Benzo(k)fluoranthene[5]	0.0073 µg/L
Chrysene[5]	0.0073 µg/L
Dibenzo(a,h)anthracene[5]	0.0073 µg/L
Indeno(1,2,3-cd)pyrene[5]	0.0073 µg/L
Total Group II Polycyclic Aromatic Hydrocarbons	100 µg/L

F. Fuels Parameters	
Methyl-tert-Butyl Ether	70 µg/L

Table 2 Notes:

[1] The following abbreviations are used in Table 2, above:
- [a] mg/L = milligrams per liter
- [b] µg/L = micrograms per liter

[2] The minimum level (ML) for analysis of ammonia must be less than or equal to 0.1 mg/L.

[3] The ML for analysis of chloride must be less than or equal to 230 mg/L.

[4] The limitation for this parameter is on the basis of total recoverable metal in the water column.

[5] The compliance level for group I polycyclic aromatic hydrocarbons (PAHs) is 0.1 µg/L. The ML for analysis of group I PAHs must be less than or equal to 0.1 µg/L.

Table 3: Effluent Flow Limitation

Effluent Flow	Effluent Limitation
	0.504 MGD

Table 3 Notes

[1] The following abbreviations are used in Table 3, above:
- [a] MGD = million gallons per day

Table 4: pH Limitations for Discharges in Massachusetts

Receiving Water Class	Effluent Limitation
Freshwater	6.5 to 8.3 SU

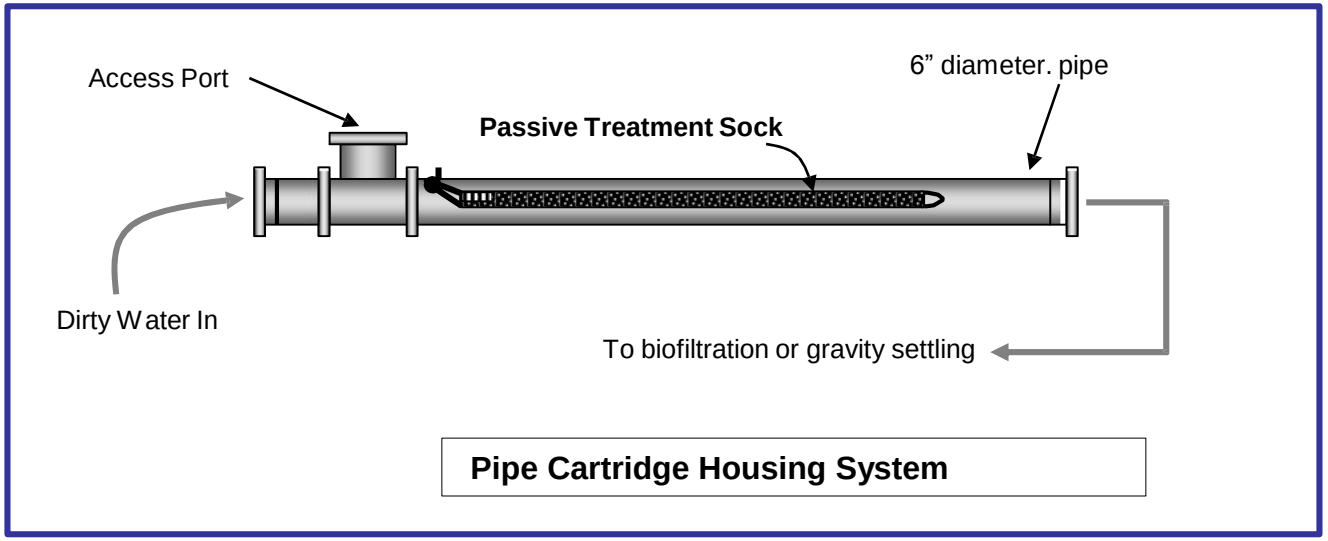
Table 4 Notes

[1] The following abbreviations are used in Table 4, above:
- [a] SU = standard units

Tighe&Bond

APPENDIX H

How to Use the Passive Treatment Sock



Passive Treatment Sock 1-lb.

Specifications:

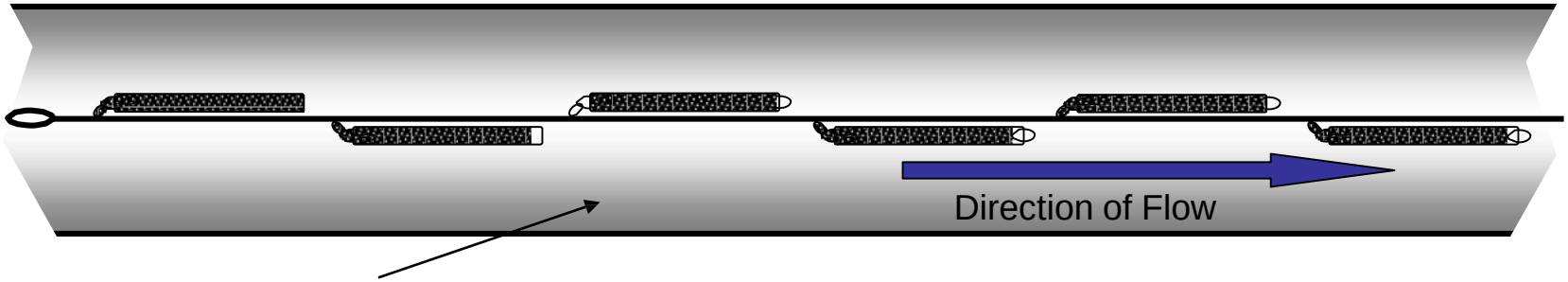
Length	36 Inches
Width:	5 in. diameter
Fabric:	Woven polypropylene
Chitosan:	1.0 lb (dry weight)
Treatment:	100,000 gal. @ 1 mg/L

Passive Treatment Sock 2-lb.

Specifications:

Length	72 Inches
Width:	5 in. diameter
Fabric:	Woven polypropylene
Chitosan:	2.0 lb (dry weight)
Treatment:	200,000 gal. @ 1 mg/L

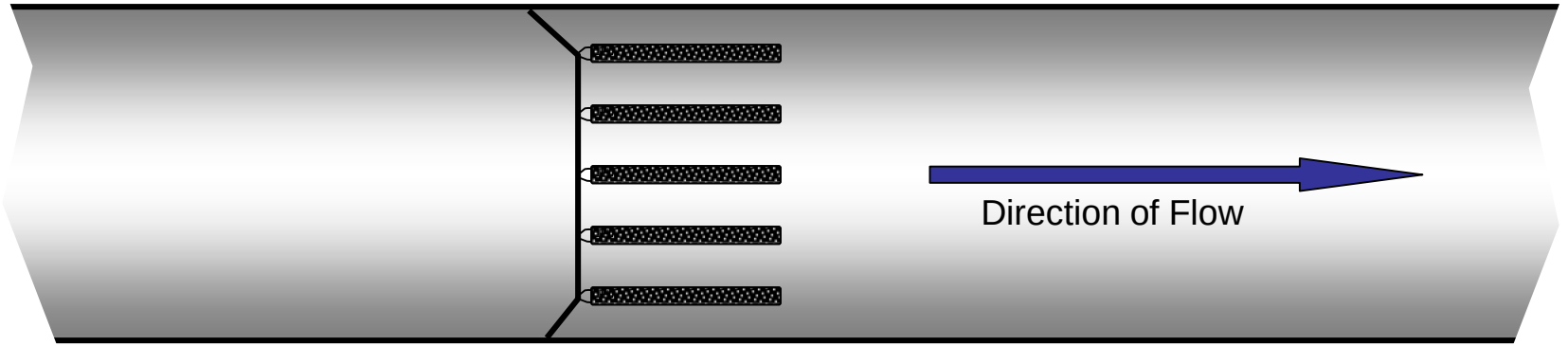
Passive Treatment Socks Connected to a Common Rope Tether in Series



Trough, Conveyance Channel or Pipe

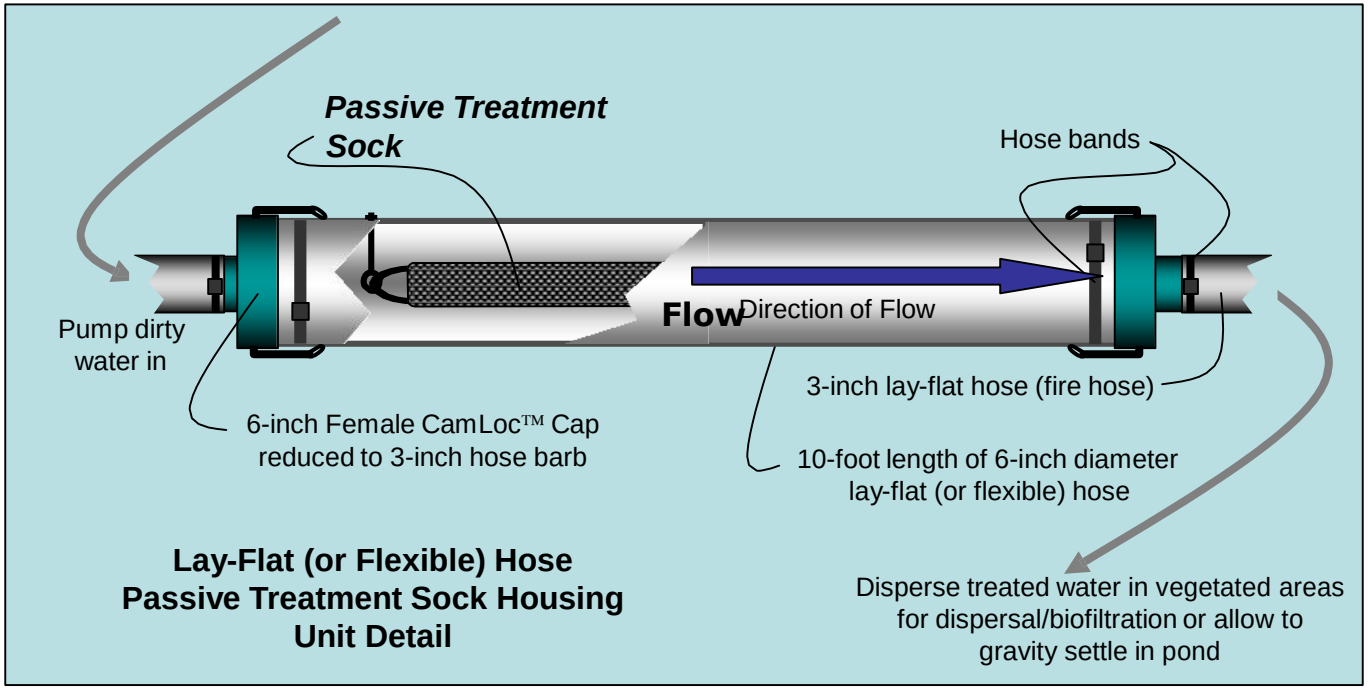
For applications where more than one Sock is needed simply connect them to a common rope

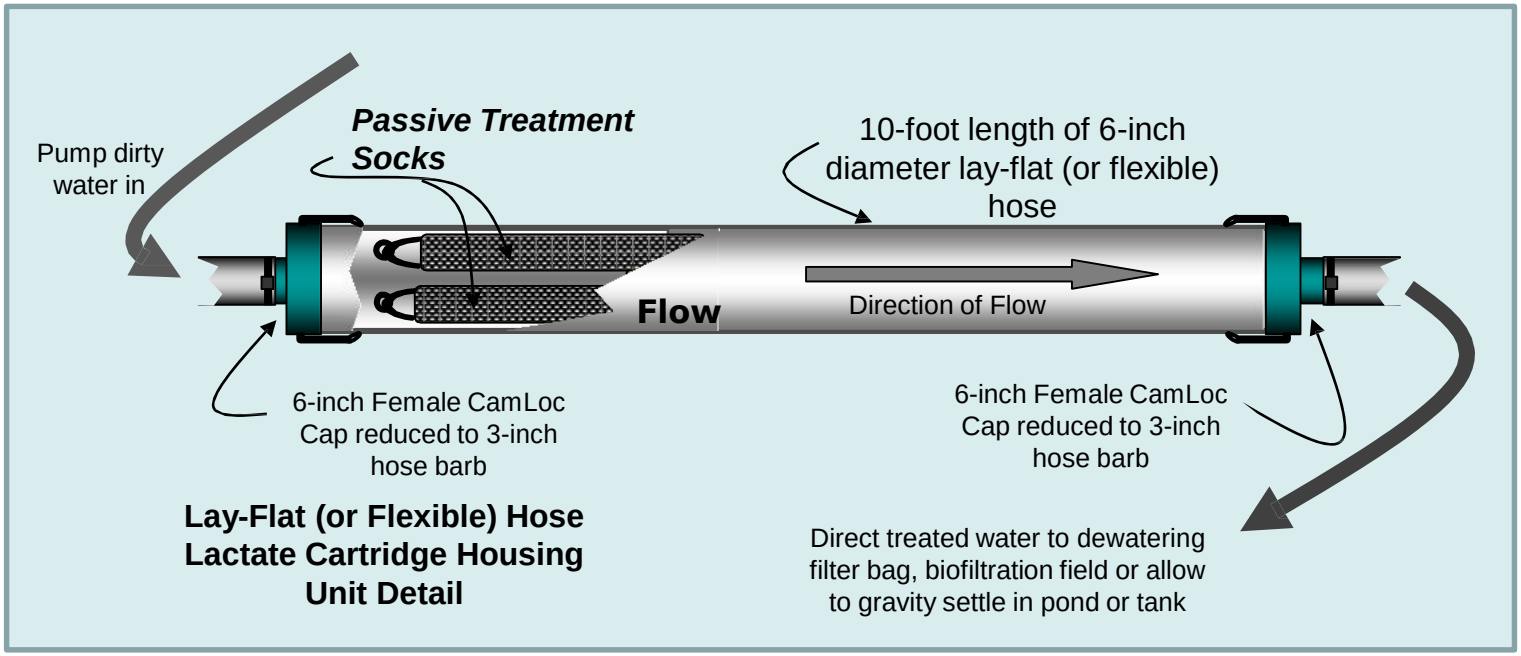
Passive Treatment Socks Connected to a Common Rope Tether in Parallel



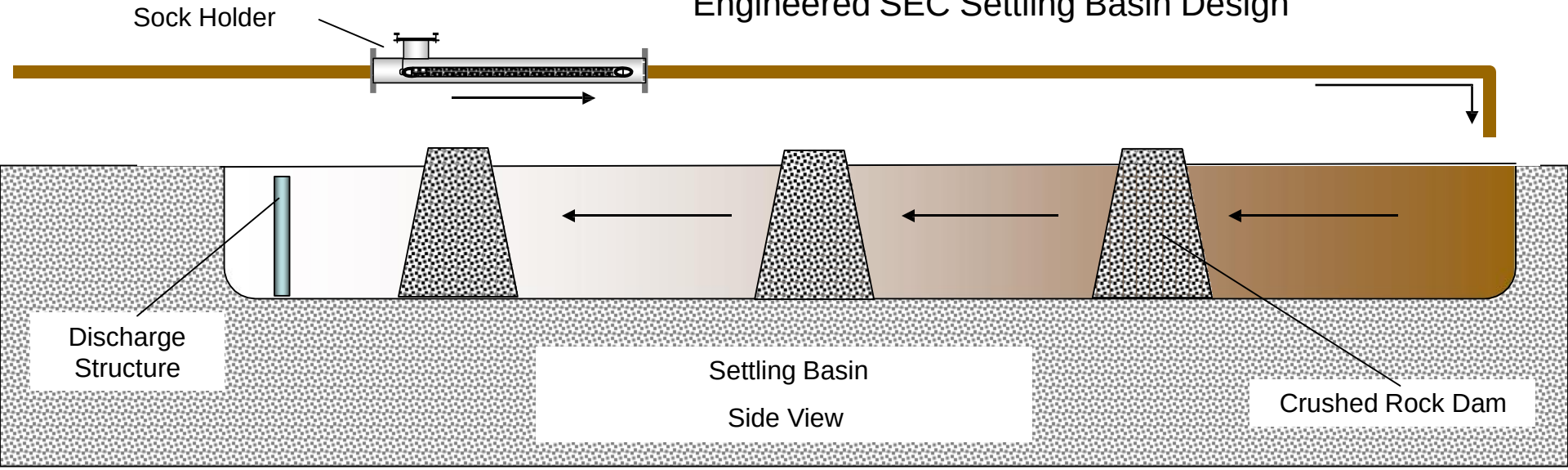
Trough, Conveyance Channel or Pipe

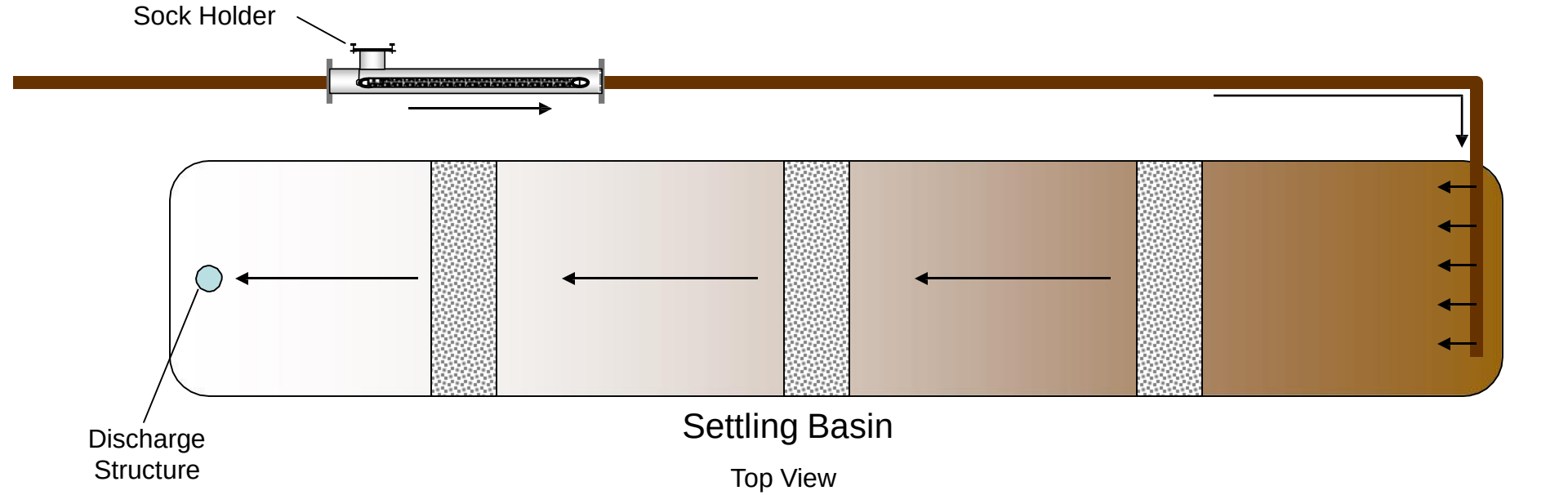
For wide channel installation simply connect Socks in parallel

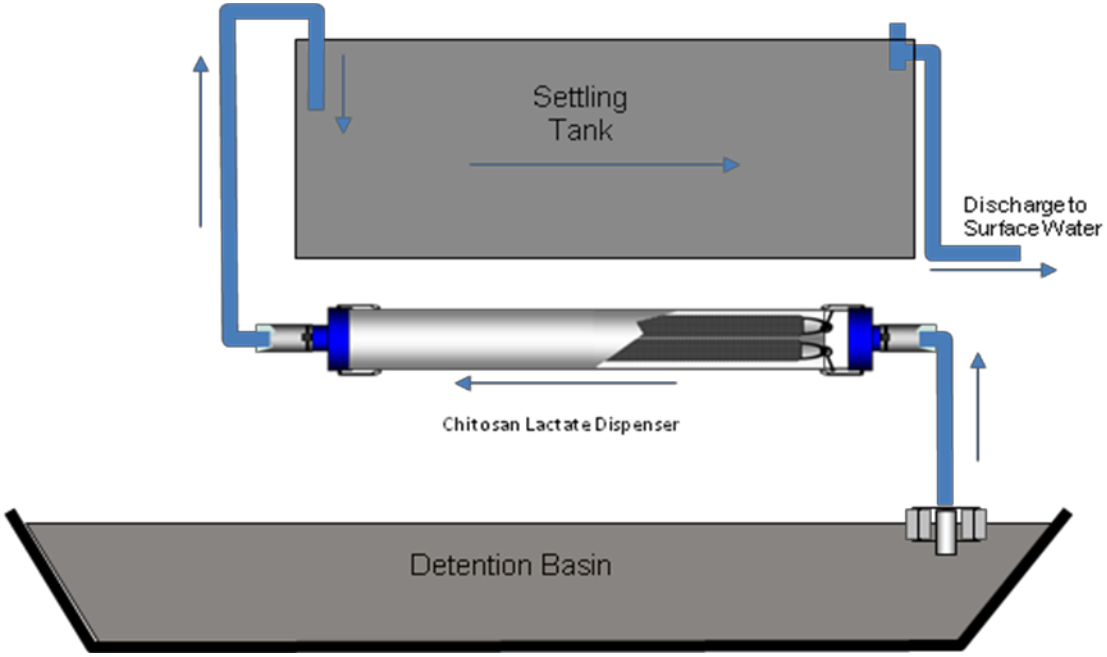

Passive Treatment Sock
Hose bands
Pump dirty water in
Flow
Direction of Flow
3-inch lay-flat hose (fire hose)
6-inch Female CamLoc™ Cap reduced to 3-inch hose barb
10-foot length of 6-inch diameter lay-flat (or flexible) hose
Lay-Flat (or Flexible) Hose Passive Treatment Sock Housing Unit Detail
Disperse treated water in vegetated areas for dispersal/biofiltration or allow to gravity settle in pond

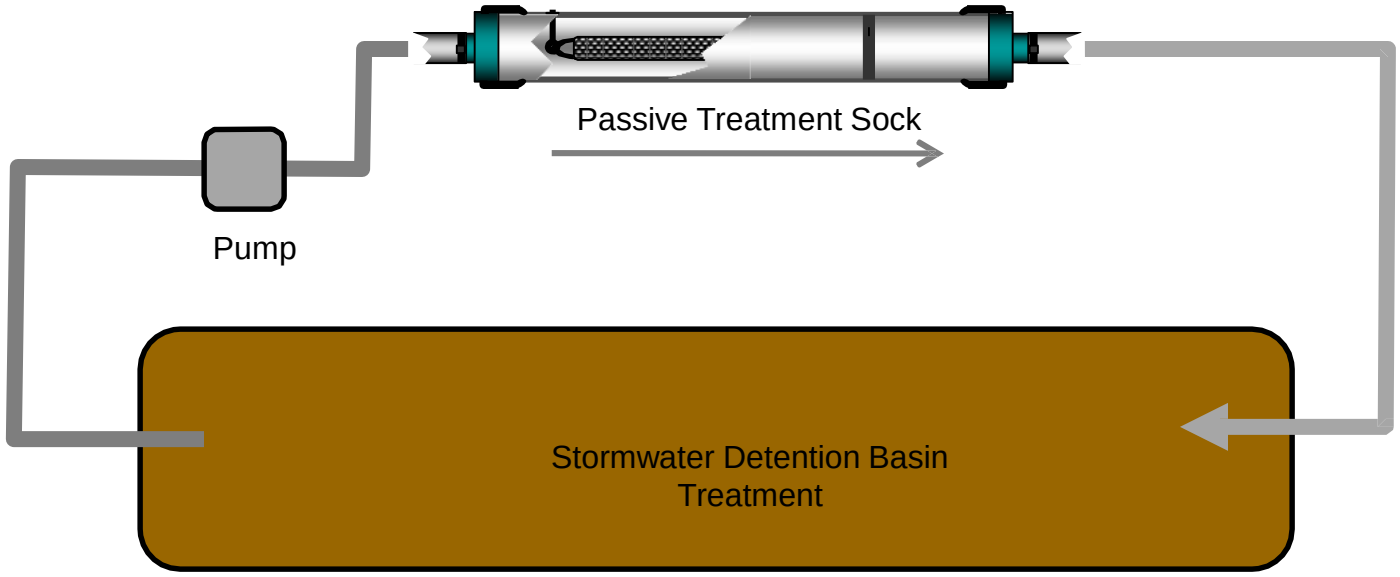

Passive Treatment Socks
Pump dirty water in
10-foot length of 6-inch diameter lay-flat (or flexible) hose
Flow
Direction of Flow
6-inch Female CamLoc Cap reduced to 3-inch hose barb
6-inch Female CamLoc Cap reduced to 3-inch hose barb
Lay-Flat (or Flexible) Hose Lactate Cartridge Housing Unit Detail
Direct treated water to dewatering filter bag, biofiltration field or allow to gravity settle in pond or tank

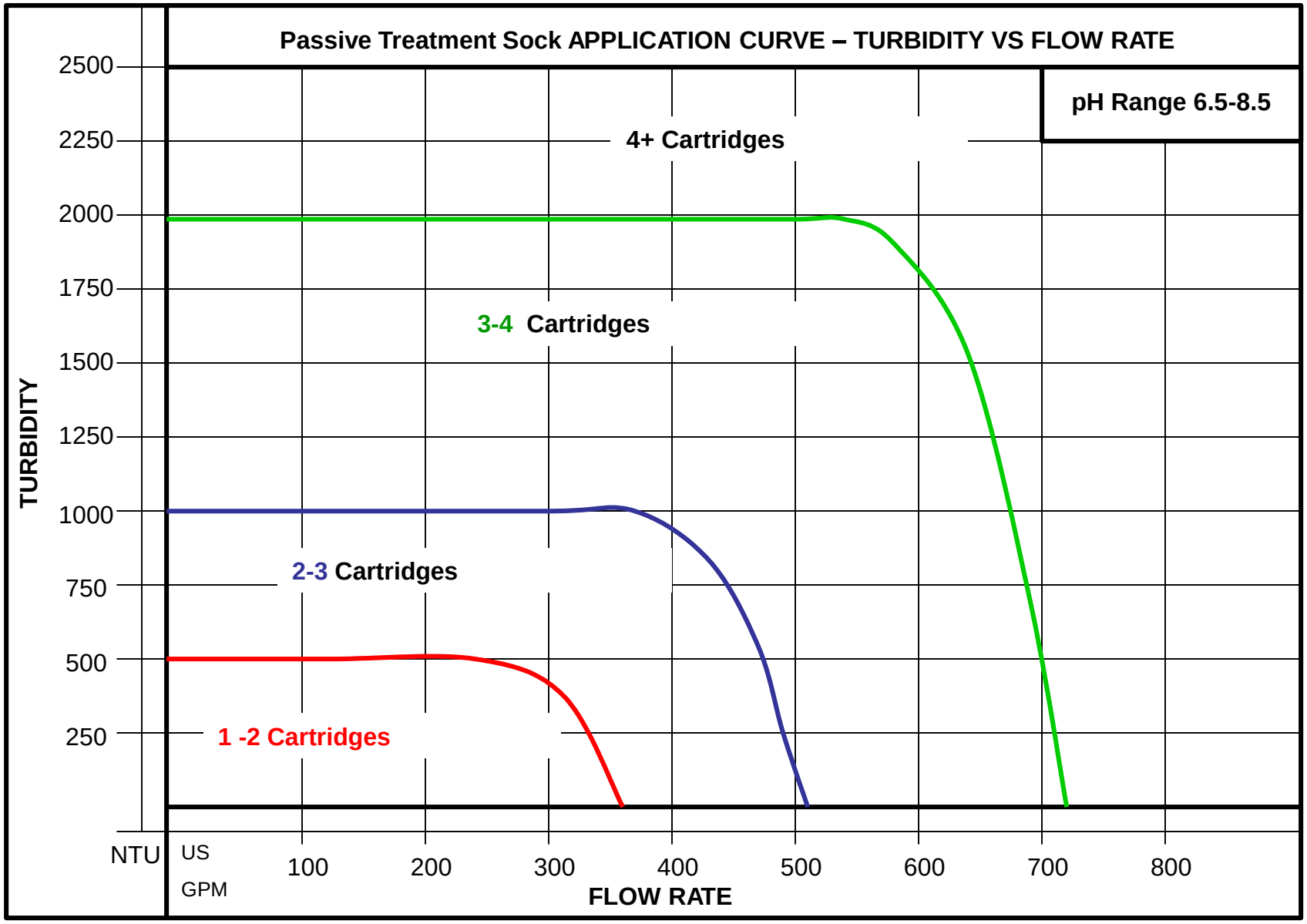
Engineered SEC Settling Basin Design






Settling
Tank
Discharge to
Surface Water
Chitosan Lactate Dispenser
Detention Basin


Passive Treatment Sock
Pump
Stormwater Detention Basin
Treatment


Passive Treatment Sock APPLICATION CURVE – TURBIDITY VS FLOW RATE
pH Range 6.5-8.5
4+ Cartridges
3-4 Cartridges
2-3 Cartridges
1 -2 Cartridges
TURBIDITY
NTU
2500
2250
2000
1750
1500
1250
1000
750
500
250
US GPM
100
200
300
400
500
600
700
800
FLOW RATE

HaloKlear®

PRODUCT FACTS

DUAL PRODUCT SYSTEM

WE'VE NEVER KILLED A FISH!

Clean Water.
Naturally.

Description

HaloKlear's All-Natural Water Treatment System

The **Dual Product System (DPS)** is quickly gaining national and international recognition as the premier all-natural stormwater treatment solution, providing unparalleled performance and reliable results in an array of projects across the globe. **HaloKlear DPS** uses biodegradable, natural flocculants that perform on a wide array of soil types and pH ranges. In contrast to other products on the market, the HaloKlear Dual Product System creates dense flocs with great shear strength and a low water content that settle very quickly. Solids can be efficiently removed from the water column – increasing performance and productivity while keeping costs low. In addition, **HaloKlear DPS** is extremely flexible with a successful track record in active, passive, and semi-passive deployment.

GREEN FOR LESS

Don't just clean the water, clean the environment

Our chemistries are less toxic when water is returned to its natural environment. All of HaloKlear's products exhibit exceptionally low toxicity, and the **Dual Product System** has been proven to have zero toxicity.* No bioaccumulation concerns exist when and where HaloKlear products are used, and our products are 100% biodegradable through enzymatic activity.

* Third-party toxicity testing concluded that no fish were killed by the Dual Product System (DPS) when both parts were used in combination of following Best Management Practices.

Product Benefits

- **Biodegradable natural flocculants**
- **Effective on a wide range of pH conditions and soil types**
- **Functions in active, semi-passive and passive applications**
- **Effective in fresh water and salt water**
- **Works with existing equipment of a part of a customized product**
- **Capable of trapping hydrocarbons, metals and nutrients**
- **Increases performance and productivity while keeping costs low**

Part One

LBP-2101 = Liquid
DBP-2100 = Dry socks
DBP-2100 MB = Loose, dry
DPS DC-1 = Dry concentrate for making down into liquid**

Part Two

LiquiFloc = Liquid
GelFloc = Dry socks
GelFloc MB = Loose, dry
DPS DC-2 = Dry concentrate for making down into liquid**

**Not available in the North American market

For additional information contact Dober at:
(800) 323-4983
info@dober.com
www.dober.com/water_treatment

DOBER

BakerCorp Water Treatment Technology

Product Description (Dual Polymer Passive Treatment System)

DBP-2100 FS (Green product, very low toxicity) is a dry product most effective when used in conjunction with (***PTS****)* chitosan lactate as part of a Dual Polymer System (DPS) to maximize floc size. This natural biopolymer is 100 percent biodegradable through simple natural enzymatic activity, leaving you no bioaccumulation concern. Currently being used in active, passive treatment systems. ***(Dose & mix DBP-2100 first then add Chitosan lactate powder)***

Gel-Floc PTS Our Passive Treatment Sock product is an organic water clarifier made from high quality chitosan lactate flake and placed within a permeable fabric. It slowly dissolves as the water flows over and through the cartridge. Once in solution, the chitosan flocculates suspended sediment particles which settle and can be filtered out. This natural biopolymer is 100 percent biodegradable through simple natural enzymatic activity, leaving no bioaccumulation concern. Currently being used in construction, industrial, municipal, and log yard water treatment systems.

SOUND ENVIRONMENTAL CONCEPTS

Safety Data Sheet

acc. to OSHA HCS

1 IDENTIFICATION

· **Product identifier**

Product form	: Substance
Product name	: HaloKlear DBP-2100 Socks
Chemical name	: Xanthan Gum
CAS No	: 11138-66-2
Product code	: 210014

· **Relevant identified uses of the substance or mixture and uses advised against**

Uses of the substance/mixture : Flocculant

· **Manufacturer/Supplier:**

Sound Environmental Concepts
22726 102nd Ave SE, Woodinville, WA 98077
1 (206) 730 - 5376
ray@soundenvirocon.com

· **Information department:** Product safety department

· **Telephone number:**
+ 1 (206) 730 – 5376

· Information department: Product safety department

· Emergency telephone number: +1 (800) 424-9300 (24 Hours)
During normal opening times: +1 (425) 881-6464
CHEMTREC (Domestic, North America) +1-703-527-3887 CHEMTREC (International, collect calls accepted)

2 HAZARD(S) IDENTIFICATION

· **Classification of the substance or mixture**
GHS-US Classification
Not classified

Safety Data Sheet

Trade Name: HaloKlear DBP-2100 Socks

2 HAZARD(S) IDENTIFICATION CONTD.

· **Label Elements**
GHS-US Labelling
No labeling applicable
· **Other hazards**
Other hazards not contributing to the classification : *May form combustible dust concentrations in air. May cause eye irritation.*
· **Unknown acute toxicity (GHS-US)**
Not applicable

3 COMPOSITION/INFORMATION ON INGREDIENTS

· **Substance**
Substance type : *Mono-constituent*
Name : *HaloKlear DBP-2100 Socks*
CAS No : *11138-66-2*
Fulltext of H-statements: see section 16
· **Mixture**
Not applicable

4 FIRST AID MEASURES

· **Description of first aid measures**
First-aid measures general : *Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).*
First-aid measures after inhalation : *Allow breathing of fresh air. Allow the victim to rest.*
First-aid measures after skin contact : *Removed affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.*
First-aid measures after eye contact : *Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.*
First-aid measures after ingestion : *Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.*

Safety Data Sheet

Trade Name: HaloKlear DBP-2100 Socks

4 FIRST AID MEASURES

· **Most important symptoms and effects, both acute and delayed**
Symptoms/Injuries after eye contact : Not expected to present a significant hazard under anticipated conditions of normal use.

· **Indication of any immediate medical attention and special treatment needed**
No additional information available

5 FIRE-FIGHTING MEASURES

· **Extinguishing media**
Suitable extinguished media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media : Do not use a heavy water stream.

· **Special hazards arising from the substance or mixture**
Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

· **Advice for firefighters**
Firefighting instructions : Exercise caution when fighting any chemical fire. Eliminate all ignition sources if safe to do so. Use water spray of fog for cooling exposed containers.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.
Other information : Spills produce extremely slippery surfaces. Avoid dust formation.

6 ACCIDENTAL RELEASE MEASURES

· **Personal precautions, protective equipment and emergency procedures**

· **For non-emergency personnel**
Emergency procedures : Evacuate unnecessary personnel.

· **For emergency responders**
Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Ventilate area

· **Environmental precautions**
Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

Safety Data Sheet

Trade Name: HaloKlear DBP-2100 Socks

6 ACCIDENTAL RELEASE MEASURES

· **Personal precautions, protective equipment and emergency procedures**
General measures : *Use special care to avoid static electric charges.*
· **For non-emergency personnel**
Emergency procedures : *Evacuate unnecessary personnel.*
· **For emergency responders**
Protective equipment : *Equip cleanup crew with proper protection.*
Emergency procedures : *Ventilate area.*
· **Environmental precautions**
Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.
· **Methods and material for containment and cleaning up**
Methods of cleaning up : *On land, sweep or shovel into suitable containers. Minimize generation of dust. Store away from other materials.*
· **Reference to other sections**
See Section 8. Exposure controls and personal protection.

7 HANDLING AND STORAGE

· **Precautions for safe handling**
Precautions for safe handling : *Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and leaving work. Provide good ventilation in process area to prevent formation of vapor. No smoking.*
· **Conditions for safe storage, including and incompatibles**
Storage conditions : *Keep only in the original container in a cool, well-ventilated place. Keep container closed when not in use.*
Incompatible products : *Oxidizing agent.*
Incompatible materials : *Sources of ignition.*
· **Specific end use(s)**
No additional information available

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

· **Control parameters**
HaloKlear DBP-2100 Socks
ACGIH : *Not applicable*
OSHA : *Not applicable*

Safety Data Sheet

Trade Name: HaloKlear DBP-2100 Socks

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

· **Exposure controls**

Personal protective equipment	*: Avoid all unnecessary exposure.*
Hand protection	*: Wear protective gloves/protective clothing/eye protection/face protection protective gloves.*
Eye protection	*: Chemical goggles or safety glasses.*
Respiratory protection	*: Use a property fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.*
Other information	*: Do not eat, drink or smoke during use.*

9 PHYSICAL AND CHEMICAL PROPERTIES

· **Information on basic physical and chemical properties**

Physical state	*: Solid*
Color	*: White to tan*
Odor	*: odorless*
Odour threshold	*: No data available*
pH	*: approximately neutral (1% solution)*
Relative evaporation rate	*: No data available*
Melting point	*: No data available*
Freezing point	*: No data available*
Boiling point	*: No data available*
Flash point	*: No data available*
Auto-ignition temperature	*: No data available*
Decomposition temperature	*: No data available*
Flammability (solid, gas)	*: No data available*
Vapor pressure	*: No data available*
Relative vapor density	*: No data available*
Relative density	*: No data available*
Solubility	*: Water: 100 %*
Log Pow	*: No data available*
Log Kow	*: No data available*
Viscosity, kinematic	*: No data available*

Safety Data Sheet

Trade Name: HaloKlear DBP-2100 Socks

9 PHYSICAL AND CHEMICAL PROPERTIES

Viscosity, dynamic	*: No data available*
Explosive properties	*: No data available*
Oxidizing properties	*: No data available*
Explosive limits	*: No data available*

· **Other Information**

No additional information available

10 STABILITY AND REACTIVITY

· **Reactivity**

The product is non-reactive under normal conditions of use, storage and transport.

· **Chemical stability**

Stable under normal conditions.

· **Possibility of hazardous reactions**

No dangerous reactions known under normal conditions of use.

· **Conditions to avoid**

Avoid dust formation.

· **Incompatible materials**

Oxidizing agent.

· **Hazardous decomposition products**

Thermal decomposition generates: Carbon dioxide. Carbon monoxide. Fume.

11 TOXICOLOGICAL INFORMATION

· **Information on toxicological effects**

Acute toxicity	*: Not classified*
Skin corrosion/irritation	*: Not classified* *pH: approximately neutral (1% solution)*
Serious eye damage/irritation	*: Not classified* *pH: approximately neutral (1% solution)*
Respiratory or skin sensitization	*: Not classified*
Germ cell mutagenicity	*: Not classified*
Carcinogenicity	*: Not classified*
Reproductive toxicity	*: Not classified*
Specific target organ toxicity (single exposure)	*: Not classified*

Safety Data Sheet

Trade Name: HaloKlear DBP-2100 Socks

11 TOXICOLOGICAL INFORMATION

Specific target organ toxicity (repeated exposure)	*: Not classified*
Aspiration hazard	*: Not classified*
Potential adverse human health effects and symptoms	*: Based on available data, the classification criteria are not met.*

12 ECOLOGICAL INFORMATION

· **Toxicity**
HaloKlear DBP-2100 Socks (11138-66-2)
LC50 fish 1 *491 mg/l Rainbow Trout; 96 hour*

· **Persistence and degradability**
HaloKlear DBP-2100 Socks (11138-66-2)
Persistence and degradability *The product is biodegradable*

· **Bioaccumulative potential**
HaloKlear DBP-2100 Socks (11138-66-2)
Bioaccumulative potential *Inherently biodegradable*

· **Mobility in soil**
HaloKlear DBP-2100 Socks (11138-66-2)
Mobility in soil *Not available*

· **Other adverse effects**

Effect on Global warming	*: No known ecological damaged caused by this product.*
Other information	*: No other effects known.*

13 DISPOSAL CONSIDERATIONS

· **Waste treatment methods**

Waste disposal recommendations	*: Dispose of contents/container in accordance with Licensed collector's sorting instructions.*
Ecology – waste materials	*: None known.*

Safety Data Sheet

Trade Name: HaloKlear DBP-2100 Socks

14 TRANSPORT INFORMATION

UN-No.(DOT): *: Non Regulated*
UN-No. (IMDG): *: Non Regulated*
UN-No. (IATA): *: Non Regulated*

· **UN proper shipping name**
Proper Shipping Name (DOT): *: Not applicable*
Proper Shipping Name (IMDG): *: Not applicable*
Proper Shipping Name (IATA): *: Not applicable*

· **Transport hazard class(es)**
Transport hazard class(es) (DOT): *: Not applicable*
Transport hazard class(es) (IMDG): *: Not applicable*
Transport hazard class(es) (IATA): *: Not applicable*

· **Packing group**
Packing group (DOT): *: Not applicable*
Packing group (IMDG): *: Not applicable*
Packing group (IATA): *: Not applicable*

· **Environmental hazards**
Marine pollutant(IMDG): *: No*
Marine pollutant(IATA): *: No*

15 REGULATORY INFORMATION

· **US Federal regulations**
All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency ToxicSubstances Control Act (TSCA) inventory.

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

· **International Regulations**
Canada
Aluminum chloride hydroxide sulfate (39290-78-3)
No additional information available

Safety Data Sheet

Trade Name: HaloKlear DBP-2100 Socks

15 REGULATORY INFORMATION

· **US State regulations**
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.

16 OTHER INFORMATION

Other information:	*: None*
NFPA health hazard	*: 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.*
NFPA fire hazard	*: 0 - Materials that will not burn.*
NFPA reactivity	*: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.*
NFPA specific hazard	*: NA - Not Applicable*
HMIS III Rating	
Health	*: 0 - No significant risk to health*
Flammability	*: 0*
Physical	*: 0*
Personal Protection	*: B*

SOUND ENVIRONMENTAL CONCEPTS

Safety Data Sheet

acc. to OSHA HCS

1 IDENTIFICATION

· **Product identifier**

· **Trade name:** HaloKlear: Gel-Floc

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**
Sound Environmental Concepts
22726 102nd Ave SE, Woodinville, WA 98077
1 (206) 730 - 5376
ray@soundenvirocon.com

· **Information department:** Product safety department

· **Telephone number:**
+ 1 (206) 730 – 5376

· Information department: Product safety department

· Emergency telephone number: +1 (800) 424-9300 (24 Hours)
During normal opening times: +1 (425) 881-6464
CHEMTREC (Domestic, North America) +1-703-527-3887 CHEMTREC (International, collect calls accepted)

2 HAZARD(S) IDENTIFICATION

· **Classification of the substance or mixture**
The product is not classified according to the Globally Harmonized System (GHS).

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** *Not applicable.*
Information concerning particular hazards for human and environment:
The product does not have to be labeled due to the calculation procedure of international guidelines
Classification system:
The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

Safety Data Sheet

Trade Name: HaloKlear: Gel-Floc

2 HAZARD(S) IDENTIFICATION CONTD.

· **Label elements**
· **Labelling according to EU guidelines:**
Observe the general safety regulations when handling chemicals. The product is not subject to identification regulations according to directives on hazardous materials.

· **Classification System**
· **NFPA ratings (scale 0 - 4)**
· *Health = 0*
· *Fire = 0*
· *Reactivity = 0*

· **HMIS-ratings (scale 0 - 4)**
· *Health = 0*
· *Fire = 0*
· *Reactivity = 0*

· *Other hazards*
· *Results of PBT and vPvB assessment*
· *PBT: Not applicable*
· *vPvB: Not applicable*

3 COMPOSITION/INFORMATION ON INGREDIENTS

· **Chemical characterization:** *Mixtures*
· **Description:** *Mixture of the substances listed below with nonhazardous additions.*
· **Dangerous components:** *Void*

4 FIRST-AID MEASURES

· **Description of first aid measures**
· **General information:** *No special measures required.*
· **After inhalation:** *Supply fresh air; consult doctor in case of complaints.*
· **After skin contact:** *Generally the product does not irritate the skin.*
· **After eye contact:** *Rinse opened eye for several minutes under running water.*
· **After swallowing:** *If symptoms persist consult doctor.*

Safety Data Sheet

Trade Name: HaloKlear: Gel-Floc

4 FIRST AID MEASURES CONTD.

· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** *No further relevant information available.*
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available

5 FIRE-FIGHTING MEASURES

· **Extinguishing media**
· **Suitable extinguishing agents:** *CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.*
· **Special hazards arising from the substance or mixture** *No further relevant information available.*
· **Advice for firefighters**
· **Protective equipment:** *No special measures required.*

6 ACCIDENTAL RELEASE MEASURES

· **Personal precautions, protective equipment and emergency procedures** *Not required.*
· **Environmental precautions:** *Do not allow to enter sewers/ surface or ground*
· **Methods and material for containment and cleaning up:** *Pick up mechanically*
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 HANDLING AND STORAGE

· **Handling:**
· **Precautions for safe handling** *No special measures required.*
· **Information about protection against explosions and fires:** *No special measures required.*
· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** *No special requirements.*
· **Information about storage in one common storage facility:** *Not required.*
· **Further information about storage conditions:** *None.*
· **Specific end use(s)** *Water flocculent*

Safety Data Sheet

Trade Name: HaloKlear: Gel-Floc

8 EXPOSURE CONTROLS/PERSONAL PROTECTION CONTD.

· **Additional information about design of technical systems:** *No further data; see item 7.*
· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** *The lists that were valid during the creation were used a basis.*
· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
· **Breathing equipment:** *Not required.*
· **Protection of hands:**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can't be calculated in advance and has therefore to be checked prior to the application.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:** *Not required.*

9 PHYSICAL AND CHEMICAL PROPERTIES

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**
· **Form:** *Powder*
· **Color:** *Whitish*
· **Odor:** *Product specific*
· **Odour threshold:** *Not determined*

---

pH-value at 20 °C (68 °F): *Not applicable*

Safety Data Sheet

Trade Name: HaloKlear: Gel-Floc

9 PHYSICAL AND CHEMICAL PROPERTIES CONTD.

· **Change in condition**	
· **Melting point/Melting range:**	*Undetermined*
· **Boiling point/Boiling range:**	*> 999 °C (> 1830 °F)*
· **Flash point:**	*Not applicable*
· **Flammability (solid, gaseous):**	*Not determined*
· **Ignition temperature:**	
· **Decomposition temperature:**	*Not determined*
· **Auto igniting:**	*Product is not selfigniting*
· **Danger of explosion:**	*Product does not present an explosion hazard.*
· **Explosion limits:**	
Lower:	*Not determined*
Upper:	*Not determined*
· **Vapor pressure at 20 °C (68 °F):**	*Not applicable*
· **Density at 20 °C (68 °F):**	*Not determined*
· **Relative density**	*Not determined*
· **Vapour density**	*Not applicable*
· **Evaporation rate**	*Not applicable*
· **Solubility in / Miscibility with**	
Water:	*Insoluble*
· **Partition coefficient (n-octanol/water):**	*Not determined*
· **Viscosity:**	
Dynamic:	*Not applicable*
Kinematic:	*Not applicable*

Safety Data Sheet

Trade Name: HaloKlear: Gel-Floc

9 PHYSICAL AND CHEMICAL PROPERTIES CONTD.

· **Solvent content:**
Organic solvents: *0.0 %*
Solids content: 100.0%
· **Other information** *No further relevant information available.*

10 STABILITY AND REACTIVITY

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** *No decomposition if used according to specifications.*
· **Possibility of hazardous reactions** *No dangerous reactions known.*
· **Conditions to avoid** *No further relevant information available.*
· **Incompatible materials:** *No further relevant information available.*
· **Hazardous decomposition products:** *No dangerous decomposition products known.*

11 TOXICOLOGICAL INFORMATION

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** *No irritant effect.*
· **on the eye:** *No irritating effect.*
· **Sensitization:** *No sensitizing effects known.*
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

Safety Data Sheet

Trade Name: HaloKlear: Gel-Floc

11 TOXICOLOGICAL INFORMATION CONTD.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 ECOLOGICAL INFORMATION

· **Toxicity**
· **Aquatic toxicity:** *No further relevant information available.*
· **Persistence and degradability** *No further relevant information available.*
· **Behavior in environmental systems:**
· **Bioaccumulative potential** *No further relevant information available.*
· **Mobility in soil** *No further relevant information available.*
· **Additional ecological information:**
· **General notes:** *Water hazard class 1 (self-assessment): Slightly hazardous for water.*
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· **Results of PBT and vPvB assessment**
· **PBT:** *Not applicable.*
· **vPvB:** *Not applicable.*
· **Other adverse effects** *No further relevant information available.*

13 DISPOSAL CONSIDERATIONS

· **Waste treatment methods**
· **Recommendation:** *Smaller quantities can be disposed of with household waste.*
· **Uncleaned packaging:**
· **Recommendation:** *Disposal must be made according to official regulations.*

14 TRANSPORT INFORMATION

· **UN-Number**
· **DOT, IMDG, IATA** *Not regulated*

· **UN proper shipping name**
· **DOT, IMDG, IATA** *Not regulated*

Safety Data Sheet

Trade Name: HaloKlear: Gel-Floc

14 TRANSPORT INFORMATION CONTD.

· **Transport hazard class(es)**
· **DOT, IMDG, IATA**
· **Class** *Not regulated*

· **Packing group**
· **DOT, IMDG, IATA** *Not regulated*

· **Special precautions for user** *Not applicable*

· **Transport in bulk according to Annex II of**
· **MARPOL73/78 and the IBC Code** *Not applicable*

· **UN "Model Regulation":** -

15 REGULATORY INFORMATION

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**
None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients are listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients are listed.

Safety Data Sheet

Trade Name: HaloKlear: Gel-Floc

15 REGULATORY INFORMATION CONTD.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients are listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients are listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients are listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients are listed.

· **Product related hazard informations:**
Observe the general safety regulations when handling chemicals. The product is not subject to identification regulations according to directives on hazardous materials.
· **Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

16 OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** *Environment protection department.*
· **Contact: Mrs. Jackson**
Date of preparation / last revision 02/09/2015 / - Present
· **Abbreviations and acronyms:**
ADR: *Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International*
Carriage of Dangerous Goods by Road)
IMDG: *International Maritime Code for Dangerous Goods*
DOT: US Department of Transportation
IATA: *International Air Transport Association*
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: *European List of Notified Chemical Substances*

Safety Data Sheet

Trade Name: HaloKlear: Gel-Floc

16 OTHER INFORMATION CONTD.

CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: *National Fire Protection Association (USA)*
HMIS: *Hazardous Materials Identification System (USA)*